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WORLD PETROLEUM

Prospects for Increasing Gasoline Consumption Best Outside U. S. • Oil Production in Colombian Jungles • Letting the Motorist See the Oil He Buys • Recent Improvements in Desulphurization • Italian Government's Initial Steps in Encouraging Refining

APRIL • 1934

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APRIL
1934

WORLD PETROLEUM

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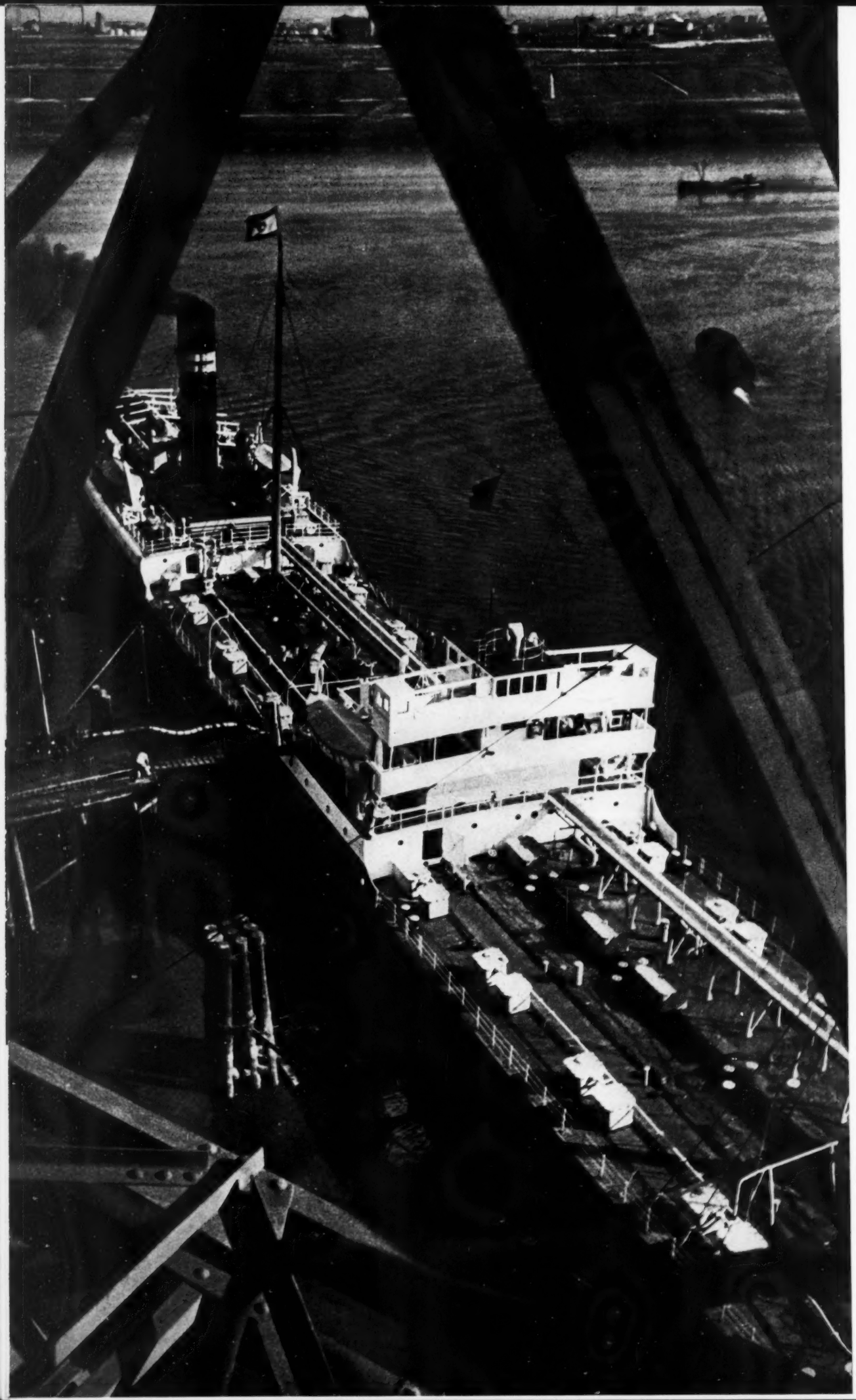

Tanker unloading
Hamburg, Germa
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Cumulative Regulation

IT WAS A witty Frenchman, we believe, who explained that the progress of civilization consisted in making new mistakes to remedy the errors of yesterday. Something of the same sort of progress is taking place now in connection with the machinery for the regulation of business which has been put into operation in the United States during the past year. In the drafting of hundreds of codes to be applied to as many different industries many errors of omission or commission were inevitable. Provisions established for the protection of labor have been converted into union bludgeons. Clauses designed to insure fair competition have been utilized to strengthen one group at the expense of another. Conscientious observers of the rules have seen their business put in jeopardy by evaders and defiers.

Naturally enough these conditions have created dissatisfaction. New regulations have had to be devised to close the loopholes left in the code provisions originally adopted. Each of these in turn has taken something away from the individual business man's freedom of initiative or has created maladjustments for the correction of which still more laws have to be promulgated. What is taking place is a repetition of the previous history of governmental intervention in trade and industry which shows that in order to make regulation succeed larger and larger doses of regulation must constantly be applied.

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Vertical vs. Horizontal

AMONG THE several inconsistencies in the industrial program sponsored by the Roosevelt administration is its support of the federated type of labor union. A tremendous amount of effort has been put into the regimentation of industry and this organization has been along vertical lines. Each line of business activity, in some instances embracing only a few dozen or a few score separate units, has been brought together into a single organization and provided with its own special code. Participation or supervision of code administration by government officials is relied upon to insure fair treatment to suppliers of the industry's materials and consumers of its products.

In the field of labor, however, the Washington authorities from the beginning have favored the horizontal rather than the vertical type of organization. Provisions assuring to employes the right of collective bargaining through representatives of their own choosing were incorporated in practically all codes adopted. The right of free choice was intended to protect workers against company dictation but an effort was made immediately by union organizers to convince employes that the real intention was that they should ally themselves with the established federated and politically active unions. These efforts met with no rebuke and in fact were more or less openly encouraged in official quarters. Recently, as employes have shown a tendency to form independent local organizations, the effort to force affiliation with the labor federation has become more pronounced. It appears in rulings of the various labor boards and was openly voiced by General Hugh Johnson at the recent NRA gathering in Washington.

Few employers question the right of their workmen to organize for their own protection. Many employers and far greater numbers of employes, however, are unwilling to subject themselves to the outside control and arbitrary domination of professional labor unionists whose primary concern is not with the successful administration of the business affected but only with the strengthening of their own organization and the enhancement of their personal power and authority.

Other things being equal it is reasonable to assume that the employes of a particular company or localized industry have a better knowledge of the conditions of that company or industry than has the distant union official who thinks only in terms of the massed power of a nation-wide organization. They are in a better position to understand what constitutes fair terms of employment in their immediate circumstances and to discuss problems in a reasonable spirit with the representatives of management. The failure of the American Federation of Labor to extend its control over some of the larger industries of the country undoubtedly is due less to the antagonism of proprietors than to a preference on the part of workers to manage their own affairs.

In the petroleum industry particularly, the federated union never has gained much ground while local or so-called company unions are strong and flourishing. This undoubtedly is due in part to the fact that oil companies as a rule pay liberal wages and extend considerate treatment to their employes. In part, it arises from the fact that the industry from the beginning has attracted the independent thinking, self-reliant type of worker who resents outside dictation in his personal affairs.

Plagued by Past Errors

IN THE CASE of petroleum the initial error was made many years ago in the judicial ruling that oil was subject to the law of capture. Without being so intended this virtually legalized larceny, so far as oil was concerned. Surface ownership entitled a man to drain from his neighbor's property all the oil that he could obtain by sinking a well on his own land. The only recourse of the neighboring owner was to put down offset wells to retain his share of the underground supply. No more effective means for defeating the operation of the law of supply and demand ever was devised.

Except for this archaic legal rule much of the machinery that has been set up to prevent the flooding of markets with unneeded oil could be dispensed with. There might be overproduction at times but its occurrence would set at work corrective forces, and spectacles such as that presented in East Texas during the past two years would be practically impossible.

On the marketing side of the petroleum industry the most prevalent abuse has been price cutting made possible or at least greatly stimulated by tax evasion. Tax evasion, as has been pointed out many times, is made possible and is strongly stimulated by excessive taxation. When motor fuel costing about five cents a gallon at wholesale is subjected to a tax of 100 percent, which is about the present average in the United States, a heavy premium is placed on avoidance. The mistaken greed of state legislatures in striving to extract higher and higher revenues from the oil industry has given rise to most of the troubles for the correction of which an elaborate system of control has been erected and is still being extended.

It is no reflection on those who have labored long and earnestly, in the face of great difficulties, to construct an effective scheme of regulation for the production and marketing of American petroleum to point out that their task would have been much simplified and perhaps rendered unnecessary by the avoidance of earlier mistakes in judicial interpretation and legislation that led directly to the institution and spread of uneconomic practices.

▼

International Outlook

J. B. AUG. KESSLER, joint managing director of the Royal Dutch-Shell group, whose constructive studies of the international oil situation are familiar to readers of WORLD PETROLEUM, recently has made an analysis of the supply situation during 1933 from which he draws certain conclusions as to the prospect of further progress in the direction of international stabilization during the current year. Mr. Kessler shows, first of all, that "rational production" is reasonably well assured for most oil exporting countries with the exception of the United States of America and the Soviet Union. So far as the latter is concerned, its output in 1933 showed practically no increase over the year preceding and it appears probable that increasing internal demand may prevent the expansion of exports in the immediate future.

In the United States, on the other hand, production of crude oil increased nearly 112,000,000 bbl. during 1933 and this country was responsible for nearly 90 percent of the total world increase. This unwarranted expansion in outturn, resulting in the breakdown of prices, led to a "flooding of the export market which carried with it the greatest dangers".

The precise nature of this danger is indicated by Mr. Kessler in the statement that a continuation of the conditions existing in 1933 as to U. S. exports can only result in competition at similar prices from foreign producers with a shattering of export prices and heavy loss to all concerned. While recognizing the improvement that has taken place in the United States since the intervention of federal authority and the adoption of the petroleum code, Mr. Kessler calls attention to one fact frequently overlooked by Americans. That is that while prices, including Gulf export prices, have risen appreciably when measured in American currency the depreciation in the exchange value of that currency has been such that on a gold basis export prices of most petroleum products actually were lower at the end of 1933 than in the earlier months of that year. Only in the case of fuel oil was there a noteworthy advance measured on this basis.

In surveying the outlook for 1934 Mr. Kessler reaches the conclusion that improvement in the international situation must be dependent upon "constructive progress," both internally and in regard to exports. The implication is clear that a higher level of export prices is needed.

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Lubes in Bottles

WHILE THERE are those who still maintain that the packaging of lubricating oil is merely a concession to a popular fad there is no doubt that the trend of the times is strongly toward packaging. This is a subject to which WORLD PETROLEUM has devoted space from time to time in the past because of its importance in the general scheme of petroleum marketing. Since our first articles dealing with the matter were published many companies have turned to packaging either in an experimental way or as a settled policy. Their experience has proved that the offering of lubes in packages appeals to the customer, increases sales and stimulates the motorist's interest in the quality of the lubricant he buys. From the company point of view packaging has the desirable effect of preventing substitution and of building a dependable patronage by inducing buyers to call for the company's established brand.

While the desirability of packaging as a sales measure is becoming more and more widely accepted many companies are deferring its adoption pending determination to their own satisfaction of the most desirable form of package. Several months ago we published an article giving the experience of certain companies with the sealed can which is so punctured on opening that it cannot be used again. In another part of this issue we present the experience of other companies with glass bottles as lube containers.

Advocates of the glass bottle claim that it possesses definite marketing advantages one of which is that it enables the purchaser to see not merely the package but also its contents. If the oil has a rich bloom and a good pouring quality the purchaser is able to see this for himself and it recommends the product to him. Superior economy also is claimed for bottles which are said to show an astonishingly low percentage of breakage when handled in proper crates or cases. In point of economy they appear to make the best showing in urban and suburban communities where the density of distribution is great and in the case of companies that distribute motor fuel as well and so can combine deliveries.

Without attempting to prejudge the case for or against any particular type of package we are glad to present the evidence that accumulates from time to time regarding all forms of containers since the question of packaging is one to which the marketing divisions of all companies must give attention sooner or later.

In this connection it is significant to note that one of the changes introduced into the American marketing code by the oil administration requires the branding of all reclaimed oil as such.

Consumption Increasing Rapidly Abroad

Prospects for Increasing Gasoline Consumption and Automobile Registration Are Brightest in Asia, Africa, and Europe According to Statistics Compiled by A. J. McIntosh of Socony-Vacuum.

CONSUMPTION of gasoline in the world at large has increased from 237,212,000 bbl. to 530,524,000 bbl. or 123 percent in the past ten years. Contrary to general opinion, however, the rate of growth has been more rapid outside the United States than within its borders. While the quantity used within the United States has risen from 185,003,000 bbl. in 1924 to 381,565,000 bbl. in 1933 or 106 percent, consumption in other countries has grown from 52,209,000 bbl. to 148,959,000 bbl. or 185 percent. Ten years ago 77 percent of all gasoline consumed was used in the United States, whereas at present the figure is 72 percent.

More striking still is the change that has taken place in the relative share of the world's requirements supplied by the United States. In 1924 exports from the United States amounted to 29,138,000 bbl. or 55.8 percent of the total consumption of these outside countries. In 1933, the volume of exports from the United States was almost exactly the same (29,186,000 bbl.), but the percentage of the total had fallen to 19.8 percent. In the meantime United States exports had risen to 65,460,000 bbl. in 1930 but dropped rapidly from this top figure in the three succeeding years. In all likelihood this decline will continue.

These figures were compiled by Albert J. McIntosh of the Socony-Vacuum Corporation and presented at the February meeting of the American Institute of Mining and Metallurgical Engineers held in New York.

The consumption figures were built up from trade estimates obtained in countries representing approximately 80 percent of the total consumption outside the United States. The others were calculated for 1931 and 1932 and checked with unit consumption in known areas and the trends noted and estimates made for earlier years on this basis. It is believed that the estimates are reasonably accurate, probably within five percent of the actual quantities, and that since errors would affect all years proportionately the trends are correctly presented.

One of the problems usually encountered in attempting to make a proper comparison between the United States and other countries has been the fact that in the latter the proportion of buses and trucks is higher. Thus in 1932, trucks and buses constituted 13.4 percent of the total registration in the United States but they represented 26.3 percent in other countries. To arrive at the proper averages, a series of "automobile units" were calculated. These were arrived at by adding the total of passenger cars to three times the registration for trucks and buses. Average gasoline consumption per unit was based on this "automotive unit."

Examination of the data relative to the United States shows a number of interesting trends. Total automotive units increased at a fairly rapid and regular rate up to the peak year of 1930, when 33,517,319 units were in use. During the past four depression years there has been a reduction in this total of about 3,000,000 units.

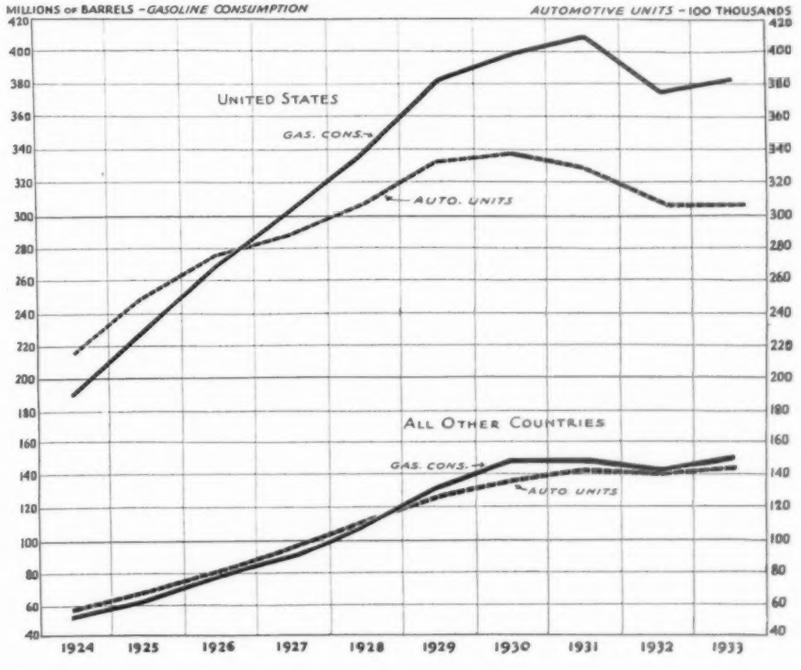
From 1916 up to 1925 there is a constantly diminishing per unit consumption, denoting continued improvement in automobile design. From 1925 to 1931, a period coinciding with the innovation of the enclosed type of automobile, a decided increase in the unit consumption of gasoline may be noted, due undoubtedly to the more general, all year use of the automobile. The leveling out of the unit consumption curve during the past three years is probably due to increased efficiency in motor design and the use of higher compression ratios.

Comparison of trends in the United States and all other countries taken as a group strikingly illustrates the relatively rapid growth of automotive power in the foreign countries. During the past ten years the increase in automotive units in all foreign countries has been 150 percent, whereas in the United States the increase

Percent Increase in Total Automotive Units and Total Gasoline Consumption, 1924–1933

Continent	Percent Increase Automotive Units	Percent Increase Consumption
North America (excl. U. S.) Central Amer. and West Indies	86.9	115.8
South America (including Trinidad, Tobago and Dutch West Indies)	245.1	222.4
Asia	243.7	366.3
Africa	257.9	287.9
Europe (including Russia and Turkey)	142.8	180.7
Oceania (including Hawaii and Guam)	189.3	171.3
Total All Foreign Countries	149.8	185.3
United States	40.0	106.2

Trend of gasoline consumption and automotive units in United States compared with all other countries.



has been but 40 percent. All present indications point to a continued increase in foreign consumption since it appears that the depression has merely slowed down an otherwise rapid growth. Even in 1933 there was a gain in the total number of automotive units outside the United States as compared with the year preceding.

That the continued increase in foreign consumption will have little or no favorable effect on the exports of the United States is rather obvious from an inspection of the export figures in the accompanying table. Exports from the United States reached a peak in 1930 when 65,460,000 bbl., or approximately 16.4 percent of U. S. consumption was exported. Since then exports have continually declined until in 1933, in spite of a curtailment in domestic consumption and an increase in foreign consumption the exports from the United States totaled only 29,186,000 bbl. or but 7.6 percent of the domestic consumption.

Analysis of foreign consumption from the standpoint of continents clearly shows where progress has been the greatest, and where continued future development may be expected. The accompanying table shows the percent increase during the period from 1924–1933 in total automotive units and total gasoline consumption for the various continents and the United States.

It can be seen from the table that the greatest increase in automotive units and gasoline consumption has occurred in South America, Asia and Africa, with North America (excluding the United States) apparently following the same trend as the United States.

South America shows an almost identical trend as does North America except that the increase over the ten year period is somewhat greater for both consumption and automotive units. The effects of the depression have tended to curtail both the number of units and the consumption almost identically so that the per unit consumption for the past five years has remained almost stationary. Continued expansion and increase in consumption in South America may be expected, however.

European consumption has been conspicuous by its very steady growth not only in automotive units but also in total consumption. In no year has the number of units failed to show a gain, while in consumption, progress has been steadily increasing with only one setback, in 1932. This loss was regained in the following year. The outlook for Europe for the immediate future is very promising indeed. Since the United Kingdom, France and

(Continued on page 121)

Trend of Gasoline Consumption and Automotive Units 1924–1933

United States

Year	Total Automotive Units (1)	Gasoline Consumption In Thousand of U. S. Barrels	Gasoline Consumption Per Unit in Gals.	Exports from U. S. In Thousand of U. S. Barrels
1924	21,864,831	185,003	355	29,138 (3)
1925	24,818,982	231,118 (2)	391	31,641
1926	27,529,837	268,299	409	43,769
1927	28,961,281	304,981	442	44,951
1928	30,721,122	338,227	462	53,412
1929	33,261,151	380,556	481	62,059
1930	33,517,319	398,078	499	65,460
1931	32,766,026	407,711	522	45,606
1932	30,603,793	377,791	518	35,438
1933	30,600,000 *	381,565	524	29,186

North America (Excl. U. S.) Central America and West Indies

				(3)
1924	884,006	8,155	387	2,908
1925	1,032,968	8,702	354	3,809
1926	1,209,248	10,589	368	4,395
1927	1,394,411	12,683	382	4,625
1928	1,575,017	16,910	451	6,532
1929	1,746,942	21,234	511	7,593
1930	1,842,971	21,823	497	7,016
1931	1,798,948	19,272	450	4,772
1932	1,699,239	17,742	439	3,310
1933*	1,652,000	17,600	447	2,881

South America (Including Trinidad, Tobago and Dutch West Indies)

				(3)
1924	272,420	3,066	473	1,589
1925	392,617	4,518	483	2,046
1926	502,973	5,989	500	2,151
1927	715,416	6,624	389	2,804
1928	880,092	8,508	406	3,961
1929	1,056,457	11,321	450	5,913
1930	1,082,087	11,616	451	6,526
1931	974,737	10,248	442	2,626
1932	939,466	9,892	442	2,797
1933*	940,000	9,885	442	2,828

Asia

				(3)
1924	252,531	2,720	452	748
1925	314,546	3,500	467	820
1926	403,198	4,455	464	1,374
1927	518,906	6,590	533	1,094
1928	659,872	7,538	480	1,413
1929	830,363	9,552	483	2,043
1930	932,446	11,138	502	2,461
1931	933,055	11,461	516	2,533
1932	839,298	12,081	605	2,086
1933*	868,000	12,681	614	2,303

Africa

				(3)
1924	152,559	1,555	428	905
1925	198,961	2,013	425	1,294
1926	239,630	2,530	443	1,461
1927	309,783	3,050	414	1,827
1928	402,509	3,775	394	2,387
1929	466,955	4,620	416	2,316
1930	515,455	5,287	431	2,443
1931	528,462	5,662	450	1,660
1932	534,605	5,682	446	801
1933*	546,000	6,030	464	991

Europe (Including All of Russia and Turkey)

				(3)
1924	3,761,189	33,759	377	20,616
1925	4,317,818	39,944	389	20,838
1926	5,028,226	50,192	419	30,948
1927	5,772,427	55,754	406	30,340
1928	6,555,227	65,474	420	34,537
1929	7,450,605	75,903	428	38,656
1930	8,210,742	88,891	455	41,597
1931	8,790,899	92,579	442	29,637
1932	8,982,960	89,294	417	20,883
1933*	9,132,000	94,747	436	15,833

Oceania (Including Hawaii and Guam)

				(3)
1924	394,759	2,955	314	2 372
1925	564,950	3,764	280	2,834
1926	705,041	4,841	288	3,440
1927	812,006	6,009	311	4,260
1928	978,478	6,956	299	4,682
1929	1,125,869	8,402	313	5,539
1930	1,137,368	8,376	309	5,418
1931	1,097,509	7,425	284	4,380
1932	1,114,616	7,414	279	5,561
1933*	1,142,000	8,017	295	4,491

* Estimated
(1) Passenger cars plus three times Trucks and Busses.
(2) Consumption includes Benzol and All Natural Gasoline beginning 1925.
(3) Includes Benzol and Natural Gasoline

La Petrolea camp of the South American Gulf Oil Corp. in May of 1933

Producing Oil in Colombian Jungles

Active Drilling Campaign on the Famous Barco Concession Now Being Undertaken by South American Gulf in Spite of Fires and Six Foot Indian Arrows.

By N. O. Fanning

THE BARCO oil concession in Colombia, South America, has been the scene of active development during recent months. This concession, while in Colombia, is on the southwestern fringe of the Maracaibo Lake basin which extends from Venezuela over the border into Colombia. On the Venezuelan side of the border, adjoining the Barco concession, oil operations have been under way for approximately ten years in the district of Colon, on a concession controlled by the Colon Oil Corporation, a Royal Dutch-Shell subsidiary. The Barco or Chaux-Folsom oil concession is controlled by the Colombian Petroleum Company, owned 75 percent by the South American Gulf Oil Corporation, wholly owned subsidiary of the Gulf Oil Corporation, and 23.67 percent by the Carib Syndicate, Ltd. The property is under the management of the Gulf Oil Corporation.

Although active geological exploration of the Barco concession has been under way since the middle of 1931, drilling operations did not commence until 1933. Actual drilling so far has been confined to the north Petrolea dome of the Tarra anticline. The first well, Petrolea No. 1, was spudded in February 9, 1933 and on March 5, at 490 ft., struck a heavy flow of oil, gas and salt water and caught fire when it blew in unexpectedly. Two natives and an American were killed when the well took fire. These workers were inside a metal circular shield which had been erected around the drilling operation as a protection against the dangerous arrows of the Motilone Indians who inhabit the jungle in the vicinity of the Barco concession.

The fire raged for several months, defying all efforts of the field force to extinguish it. Finally a hurry call was sent to Tulsa, Oklahoma, for an internationally known oil well fire fighting expert, who immediately secured a place on the first plane bound for Maracaibo and reached the blazing well in three days. After several efforts the expert was successful in extinguishing the fire by digging a passage to the well shaft underground and pumping concrete into the formation completely plugging the well which has now been abandoned.

Crude from this well tested 43 Beaume gravity.

The next test, Petrolea No. 1-A is located about one kilometer (five-eighths of a mile) south of Petrolea No. 1. Drilling was commenced on August 1, 1933 and is still under way. The intention being to test deeper formations in this well, it was drilled through the producing horizon of No. 1 with great care to prevent a blow-out and a repetition of the fire.

Petrolea No. 2 is located about two kilometers south of No. 1-A and was spudded in on January 31 of this year.

The location for Petrolea No. 3 is approximately eight kilometers south of No. 2 and is on the South Petrolea dome of the Tarra anticline. The beginning of drilling operations at this location will be delayed some months because of the time required to build transportation facilities to move equipment to the location.

Petrolea No. 4 is located about one kilometer east of No. 1-A and will probably be drilled before Petrolea No. 3.

A drilling site has been selected for a test of the Rio de Oro anticline in the northern part of the concession and it is expected that drilling operations can be started within a few months. The new test will be called Oro No. 2.

On the basis of present information, it appears that the two anticlines mentioned are the chief structural features within the concession warranting testing for oil and that hope for developing commercial production rests largely upon the drilling operations now under way and contemplated in the near future.

The story of operations in connection

Colombian tiger shot by a guard near the kitchen of the camp at Curazao with a single barrel shotgun

The customary means of river travel: a geological party on the Sardinata River.

with the Barco oil concession is not complete without some mention of the difficulties which have rendered its development particularly hazardous and costly. All material used on the Barco is brought in through Venezuela. After being shipped from the United States to Lake Maracaibo it is transferred to lake barges which move it to the mouth of the Catatumbo River. The material is there transferred to smaller river barges which can navigate up the Catatumbo and smaller branch streams which wind their way through the jungles to the areas on the concession under development. The route is clearly set forth on the accompanying map. The river haul alone amounts to about 150 miles.

Heavy materials have to be moved during the rainy season which lasts only about three months of the year; October, November and December. Thus, enough material has to be moved in this restricted period to provide for practically a year's operation until the next rainy season comes around. To commence operations on the Barco approximately 2,300 tons of heavy material were moved in during the fall of 1932. In the past rainy season, that is, during October, November and December, 1933, about 3,500 tons were moved in. Lighter material can be moved during the remainder of the year.

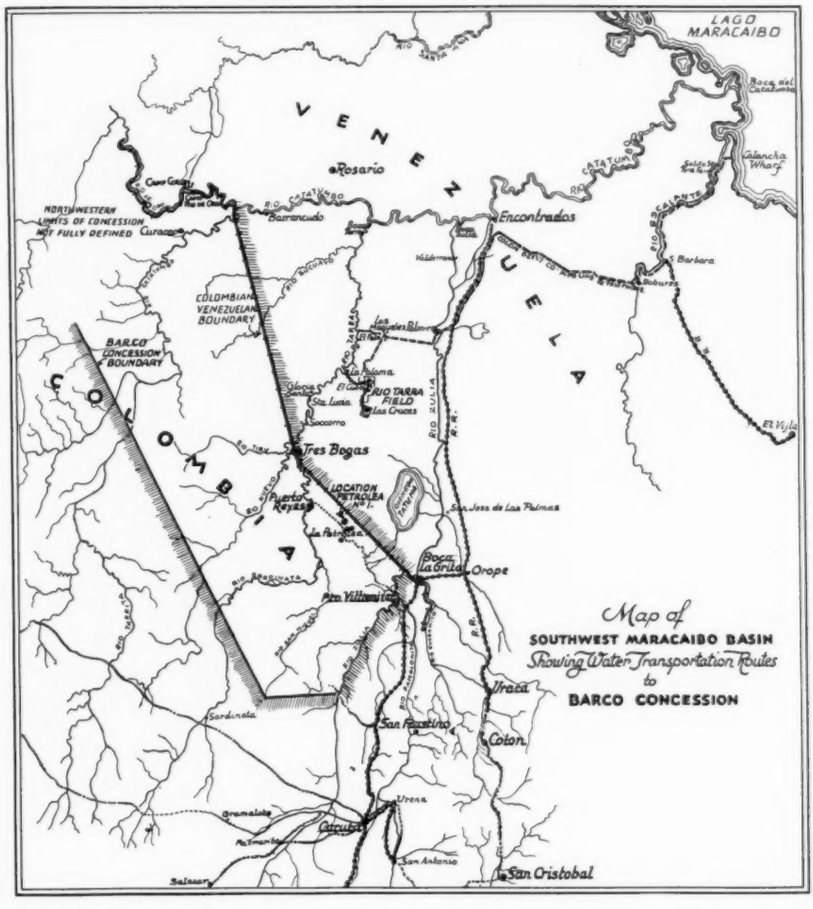
It is evident from this that development of the concession in every detail has to be planned out carefully in advance and the bulk of the material selected and shipped must conform to every need and meet every requirement or development would be seriously impeded.

The topography of the Barco concession itself is uneven and is covered for the most part by dense jungle growth. The rivers cut through deep ravines in many portions of the area. In the Oro region there is considerable outcropping of rock which has to be blasted through for the making of passable roads to the development sites.

Besides the usual hazards encountered in the development work in tropical countries, the workers on the Barco concession have had the added discomfort of being in a country visited by hostile Indians of the Motilone tribe. In fact several casualties from bows and arrows wielded by these Indians have been recorded during the past few years.

The Motilone Indians are a mysterious tribe that inhabit the jungles between the Magdalena River and Lake Maracaibo. They have seldom been seen by white men but the effects of their forays are frequently apparent when a camp that has been temporarily left unguarded is found completely destroyed, or a member of a party passing through the jungle is killed or wounded by arrows from unseen Indians.

The Motilone tribe lives in communities in clearings in the jungle. One account of the commencement of hostilities, that may or may not be accurate, suggests that a surveying party sent up one of the tributaries of the Catatumbo some years ago entered a temple of the Motilones and



without realizing the significance of the place removed idols and symbols considered sacred by the savages who promptly retaliated by ambushing the party on its return downstream and inflicting serious injuries from the shores of the stream without once becoming visible.

The method of attack is simple and effective. It consists of the Indians moving noiselessly through the jungle and surrounding a camp. There they wait until some member of the exploration or surveying party separates himself from the main group. Apparently the Indians who are slightly less than average height plant the bottom part of the bow in the ground to steady the aim and discharge a six foot arrow tipped with extremely hard wood.

These arrows frequently have proved fatal and always result in a serious wound. They are fired at short range and are extremely difficult to remove because of their great length and the fact that the three foot tip of wood is so tough that a steel hacksaw is necessary to saw through the arrow. Contrary to general belief the arrows are not poisoned.

A typical attack occurred on February 27 last year at the Puerto Reyes camp of the South American Gulf Oil Corporation. The camp consisted of two supervisors, 25 peons and one National Policeman. One of the peons who had left the camp and was passing a derrick was struck by two Indian arrows and died within ten minutes. A watchman fired several shots into the jungle without effect and claimed to have seen four Indians. Lights were immediately extinguished and a guard thrown around the camp maintained a vigilant watch until morning. Investigation revealed that a number of Indians had gathered around the derrick, indicating that they had made a previous survey of the camp and waited there until someone should pass.

Another report from a South American Gulf Oil Corporation party ends with the grim remark that, "Soft nosed bullets will be most satisfactory". This, after an attack by more than 50 Motilones lasted all night on a camp in the Petrolea valley and succeeded in wounding one man. The party was forced to abandon the camp due to shortage of ammunition. This attack occurred at the same time that an attack on another camp fifty miles further down the valley was in progress, indicating that a considerable number of Indians occupy the valley.

A large police force is provided by the Colombian Petroleum Company for the protection of the several hundred men employed on the Barco concession, but the dense jungle makes it difficult to detect the movements of isolated groups of Indians who occasionally make forays in the vicinity of the oil camps.

The presence of wild animals in abundance in the territory is merely a routine feature of jungle development, but the photograph of the jaguar shown here after it was killed at the entrance of the camp kitchen in the Rio de Oro area speaks for itself.

District of Colon

IN VENEZUELA, across the border from and adjoining the Barco concession, in the district of Colon, the Colon Oil Corporation has two oil fields, the Tarra and Los Manueles, in operation and has in past years explored two other areas in which shows of oil and gas were found, these latter known as the Rio de Oro and Rosario fields.

The Rio Tarra and Los Manueles are on the Tarra anticline, the same anticline on which the La Petrolea operations in the Barco Concession are being carried on. Production from the former fields and from the La Petrolea structure, however, is believed to come from formations of different age. The La Petrolea No. 1 well struck oil at a depth of only 490 ft. from the Cretaceous, which, it is believed, dips down under the younger formations from which the Tarra and Los Manueles output is derived. It is possible La Petrolea formation may be found productive under the Tarra field at a depth of less than 10,000 ft., but this is merely guesswork.

The Rio de Oro field in the district of Colon is about 12 kilometers from the location of Oro No. 2 on the Barco. This field is one of the older developments undertaken by the Colon Development Company in 1914 and resumed following the close of the World War. The last well drilled at Oro was in 1926. In all, four wells were drilled, in which small production of 27–30 gravity oil was discovered at depths ranging from 1,000 to a little over 3,000 ft. All operations have been suspended in the Oro district since 1926.

About 25 kilometers east of the Oro structure Colon Development Company in 1929 drilled a deep test in what is known as the Rosario district. This well went down over 6,800 ft. and is reported to have had some showings of oil. No further wells have been drilled.

The only drilling operations now under way in the Colon district are on the Tarra anticline in proven territory and are of routine nature. In the near future, however, a test will be started approximately 1500 meters north of the outlying well in the Rio Tarra field. This is in the nature of a wildcat, the hope being to extend production in this direction.

Geological surveying on the Orinoco. Courtesy Gulf Refining Co.

Letting Motorists See What They Buy

In Responding to the Public Demand for Packaged Lubricants Some Companies Have Largely Increased Sales by Use of Sealed Bottles: The Appeal of Visibility in Creating Attractive Displays.

FROM time to time World Petroleum has given space to discussions covering the packaging of lubricating oils for retailing to the motoring consumer. It has advocated the use of tamper-proof containers because dispensing of oil in this form is in accord with the trend of modern merchandising and affords the only possible protection against substitution. Various factors enter into the choice of a container. Among these are relative cost, durability, ease in handling and sales appeal. On this phase of the subject World Petroleum has published the results of experimental tests by various marketing companies. The accompanying article incorporates the experiences of large distributing organizations having extensive sales territory in the eastern United States which selected the sealed bottle as the form of package best suited to meet their particular conditions.

FOUR YEARS ago an important petroleum company marketing in the eastern United States recognized the necessity for stocking a line of Pennsylvania lubricating oils in addition to its regular motor oil. There was a definite demand by motorists for Penn lubricants, and a considerable percentage of the company's patrons purchased motor fuel requirements only at its service stations, driving elsewhere for lubricating oils. Inclusion of this high-grade line of lubricants brought up the question of protecting the stock from substitution and adulteration. The advisability of stressing the quality of the new line was evident. This meant a new marketing angle involving a certain amount of experimentation.

Careful investigation revealed that substitution of inferior motor oil was practiced extensively. It was displacing oils of recognized quality to the extent of anywhere from 12 percent to 35 percent. What harm it was doing to the priceless reputation of the company was impossible to estimate. One conclusion was certain; the company owed it to itself and to its customers to protect its product from refinery to crankcase. Sealed containers of various types would perform this function at a slight additional cost. Each type offered certain claims for consideration, and a careful investigation

Above: pouring the oil into the breather pipe, using the convenient metal spout.

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'See the oil you buy' offers a powerful slogan to make the motoring public fully conscious of the benefits of packaged oil.

of the cost of each type, correlated with the function that it would perform, was undertaken.

The company markets in a fairly concentrated area, a fact that may have made its problem slightly different from that of a company distributing its products through widely separated outlets. In an urban marketing area the relative handling cost of different packages was a minor factor while the disposal of crushed and useless cans was an immediate problem compared with rural outlets where this question did not become a pressing one until the containers had been in use for some time.

The question of display, of producing a new marketing appeal to emphasize the fact that a really high grade lubricant was available to the motorist's advantage, suggested a bottle made of a very tough, transparent glass. This bottle, tall and slender, arranged in attractive display, showing clearly the highlights and color of the motor oil, clean and transparent, served to attract the motorist's eye, assured him of full measure, and generally instilled confidence that he was getting exactly what he asked for and perhaps a little more than he was paying for.

In view of these considerations a glass bottle just over 14 in. high and a little over 3½ in. outside diameter was adopted although some companies use a container 18 in. high. The oil is sealed in the bottle in such a manner that the seal must be destroyed before the contents can be removed. Various forms of caps are available: such as aluminum, and paper-lined aluminum, or the crown seal. A spout adds to the convenience of use in the case of certain models of one make of car. It serves the purpose also of allowing the bottle to drain itself while the station attendant is left free to fill the gasoline tank, clean the wind shield, fill the radiator, or to interest the customer in other services offered by the station.

Modern merchandising of motor oils has been established at this company's outlets for some years now. What have been the results of the bottle experiment?

In one case where the bottle was applied to regular oil, sales increased by 40 percent. On premium oil it has been possible to maintain the price despite lower charges on bulk and canned Pennsylvania oils by competing companies. It is not of great practical importance to consider how much of the increased gallonage of the lubricating oil department was due to the company's actually supplying motor oil to customers who asked for it; how much resulted from a return of customers who had gone elsewhere to seek Pennsylvania oil and allowed their tanks to be filled with motor fuel; how much was brand new business attracted by the security of a sealed container and the mute but forcible message of the attractive display of bottles. No doubt all three factors contributed to a welcome increase in the sales of lubricating oils. New dealers were attracted by the possibility of being able to carry much smaller stocks due to the bottle delivery system, and still being in a position to satisfy any demand. New dealers were attracted by the increasing demand for the company's product. Damage to the good name of the company through the substitution of reclaimed crankcase drainings or lower grade products was averted.

It has been found that distribution in an area not over 50 miles in radius is practical; in this case 35 miles was most economical. That is, there should be a bottling station serving an area 50 miles in radius. The cost of the necessary equipment for the filling plant is comparatively small being about $400. The bottles are delivered to the service station in compartments on the sides of the

Sealed bottles of lubricating oil make an attractive display in addition to protecting the motorist.

gasoline tank vehicles where five-gallon oil cans were carried formerly. Crates can also be delivered on trucks designed exclusively for bottles, such as those used by distributors of soft drinks. Where stake trucks are used the crates of bottles are loaded from one side of the truck and unloaded from the other side, which simplifies the task of handling the crates. Empty bottles are collected at the time the full bottles are delivered. If a bottle is broken while at the service station, it becomes the service station's loss. This system makes the service station men give reasonable care in handling. The oil company pays the initial cost of the bottle, but only absorbs its costs should the bottle be broken in transit or when cleaning and filling. Actually, breakages work out at about 2½ percent per annum including service station damage. After about 15 of the 70 probable trips the bottle has paid its way. Motorists who take home bottles of oil must leave a deposit on the container. Use of bottles avoids the possibility of metal chips entering the engine crank case.

One bottling plant such as this will serve economically a marketing area 50 miles in radius.

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Lube oil protected from refinery to crankcase instills confidence in the consumer.

To take a specific case in the New York metropolitan area, the Shell Eastern Petroleum Products Inc. has been using the glass bottle for several years for its grade-A Pennsylvania motor oil (Shell-Penn) which sells at 35 cents a quart. Sales increased considerably when the oil was bottled. When the rising curve of sales began to flatten out the company faced a real test on the price obtainable for packaged oil. Competing companies dropped the price of their Pennsylvania oils to 25 and 30 cents a quart. Shell Eastern, however, maintained its price at 35 cents without loss of sales. Obviously motorists who were buying purely on a price basis were going to the cut-rate stations where there were no sealed containers to ensure the quality of the oil—and where motors didn't last long.

An official of Shell Eastern expresses the view that the sealed container is here to stay regardless of its extra cost and that in populous centers the glass bottle offers the greatest economy and best sales features of the various tested forms of packaged oil. Recently, substitution of bootleg products for their regular "house brand" motor oil became so extensive in the New York metropolitan area that it was decided to adopt the glass bottle for this grade too. In a very short period increased sales definitely showed that the motoring public prefers this form of sealed package.

In fact, the outstanding result of the use of the sealed quart bottle for "house-brand" motor oil by Shell Eastern is the surprisingly large increase in sales in the Metropolitan New York area. It was first used for regular motor oil on April 1, 1933.

The company now has over two million bottles and a proportionate number of metal shipping crates in service throughout its marketing territory for Pennsylvania oil outside Metropolitan New York area and for both Penn and regular grades within the Metropolitan New York area.

The Standard Oil Company of New Jersey has recently been having two widely-separated experiences with the glass bottle; one in the Rochester district of New York State through its subsidiary, the Colonial Beacon Oil Company, and the other through the Anglo-American Oil Company Ltd. in Great Britain where the bottle was used to introduce a new brand of hydrogenated motor oil, and resulted in a remarkable success during the twelve months since its adoption. The situation in Great Britain is somewhat different from that existing in the United States due to the greater concentration of outlets in a comparatively small area and because the average sales per service station are not more than 300 gal. per year, compared with approximately 700 gallons in eastern United States.

A prominent official of Jersey Standard expresses the opinion that lubricating oil can be handled from the refinery into the car without exposure to dirt or contamination and at a lower cost than when it is vended in tins or bottles, but he recognizes that American buyers lean strongly to packaged products.

"There are advantages accruing to the bottle," he says. "For one thing, the oil is visible and the customer has a certain amount of interest in getting what he thinks is a good shade. The bottle is not destroyed, but is used over and over again. The manufacturers maintain that the average bottle will last for eighty round trips. The first cost, in small quantities at least, is lower

and probably the bottle lends itself better to filling where this is done at a small warehouse. In other words, it is a very simple matter to put a seal on a bottle whereas some machinery is needed to make an air-tight enclosure of a tin."

For some other districts the Jersey Standard is trying out the can (costing about three cents lithographed and delivered at the refinery) side by side with the same oil in bulk, and feels that the man who counts his pennies will take the loose oil while the more careful motorist will favor the canned product. "Because the customer sees the can destroyed," says the same official, "he knows that by no chance is he getting oil other than that indicated on the label."

One important oil company marketing in the middle-western United States adopted the glass bottle because of substitution practiced by a number of dealers and even among service station men at some of their own company stations. After their bottle campaign had started the increase of sales was very noticeable. About 5000 new dealers became interested by this modern way of selling oil, and because they could purchase in small quantities which meant smaller investments in stocks and more rapid turnover in dollar inventories. Approximately 50 percent of this territory is now served with bottled oil. Without including the cost of the bottle, but including all labor in connection with handling, cleaning, cleaning fluids, filling, breakage, and five years' amortization of the entire investment in bottles and bottling equipment, the cost figures out at 3½ cents per gallon for motor oil. This company is using an 18 in. bottle costing about $12 per gross; but the same make of 14 in. bottle costs $8 per gross.

One practical shipping crate is widely used, has a solid steel cover, open sides, and spring divisions which hold the bottles apart.

In order to maintain sales through jobbers and independents where the marketing radius is greater than 50 miles from a bottling station, the company found it advisable to adopt sealed cans to augment bulk sales.

Quite a different dispensing system was adopted by Socony-Vacuum Corporation in connection with the use of glass bottles in ten eastern and middle-western states. Instead of all containers being filled at bottling stations established at strategic points the oil is delivered in bulk to dealers and to service stations and the tank driver refills the 60 gal. storage highboys. Each highboy is fitted with a special combination cap and lock to which the tank wagon hose is connected. It is impossible for the attendant to open or close this cap because the key is fixed in the hose nozzle and cannot be withdrawn until it is locked by a bayonet action of the hose nozzle.

All these bottles are equipped with special non-refillable spouts; that is to say they are non-refillable in the ordinary way and can only be filled by the dealer by the co-action of the bottle spout and a special nozzle mounted on the highboy, which is clearly shown by one of the accompanying illustrations. This method of tamper-proof vending of oil is said to be exceptionally economical and unquestionably very much less costly than the sealed can. The company has several million of these bottles in service. As they are only delivered to the service station and not collected each time they are emptied, the cost of delivery is the same as that of any other motor oil supplied in bulk; but the bottle does not get washed every time it is used. There is no cost attached to filling the bottles other than that of the spout nozzle as the service station attendant can do the filling in odd moments. A very simple type of diamond-shape bottle is used, and the patent cap is the most expensive part of the unit. Sole rights to

Showing the motorist the sealed bottle emphasizes the importance of correct lubrication.

Patented pump nozzle of the Socony-Vacuum tube tanks will discharge only into the spout of the refil-proof bottle assuring the customer of Socony-Vacuum products.

use this equipment are owned by the Socony-Vacuum Corporation.

Socony-Vacuum also is adopting sealed cans as a protective measure in a few districts where demand has been definitely created for the tin container, but the latter will not supersede the glass bottle. Socony-Vacuum's can is taller and of less diameter than cans commonly used.

Regardless of other considerations successful merchandising involves giving the public what it wants. There is no doubt that there is a strong public appeal in packaging. The advantages in the public mind of packaged lubricating oil are not difficult to see. Sealed containers make substitution of inferior grades impractical. This fact alone increases a company's actual share of the lube business. It protects the company's reputation. Of what use is it to spend millions of dollars to produce a high quality lubricating oil and enormous sums advertising a trade mark and brand if the customer receives reclaimed crankcase drainings or some inferior make of oil when he asks for this brand? After the numerous investigations there can be no doubt that a very appreciable amount of substitution takes place. Revelations concerning the extent of gasoline tax evasion indicated that a certain percentage of the retailers were not morally above increasing their income by extra-legal methods. Motor oils of a kind are available at very low cost; it is obviously perfectly possible for the station attendant to put this oil into the ordinary dispensing equipment and thereby make some additional money for himself. In short, the means are at hand and in many cases the inclination is there. The sum of these factors is substitution—and one answer is the sealed glass bottle.

On the question of packaging versus bulk sales most, if not all, of the companies that have investigated the subject agree that the advantages of protecting their product—and their customers—overbalances the added cost of handling. On the question of the most desirable type of container, however, different companies have found different answers. Some of them admit that on this phase of the subject they are still in the experimental stage. One company whose experience has been described sums up its conclusions about as follows:

The initial cost of cans is less than that of bottles in the United States, but almost the same in Great Britain. But, the initial cost of bottles is to be divided by 40 as this is a conservative estimate—drawn from actual experience—of the number of round trips that bottles will average. The cost per trip for bottles is, therefore, about 0.15 cent against 2.5 to 3 cents per trip for the cost of cans which make the trip only once. The freight on bottles is higher, due to their greater shipping weight, and the necessity of a return trip. By the time the lower cost of installing bottles is taken into consideration, however, the additional freight charges are more than offset.

Another advantage of glassed lubes is saleability. "See the oil you buy" is a slogan with strong possibilities of appeal to the motorist. In this particular respect the companies that have adopted bottles feel that they present the product in a more attractive light than other containers. The oil is visible and the particular bloom of the Pennsylvania oil, or the special color of any well-known brand developed by certain processes, can be readily seen to inspire the purchaser with

confidence that he is getting what he is paying for. The general practice is to fill the bottle above the ring that marks one quart by three percent excess. The company's name or trade mark can be reproduced by a permanent applied color process on the bottle, if desired. The shape of the bottle can be such as to make it look impressive as to the quantity it contains. On a revolving stand with lights behind the circle of bottles, the entire display set on the pump island, the motorist's eye can be unfailingly attracted to the display and the question of whether he needs oil can be forcibly presented to him.

The importance of a good display of lubricating oil cannot be over-emphasized. Lubricants are one type of product that the motorist does not have to buy at one particular time, as in the case of motor fuel. Very often a motorist may actually need motor oil without being aware of the fact. An attractive display showing the oil itself, rather than just the container, will remind the customer of motor oil while he is purchasing gasoline, and so help to increase sales.

Once a motorist is sold on the idea of sealed containers for lubricating oil he is unlikely to be satisfied with anything else. During the past summer thousands of motorists from the southwest apparently read with interest the advertising of a nation-wide distributor of petroleum products who was trying out the sealed container as an adjunct to marketing in the Chicago area. Sales of this company's product increased noticeably. When the visitors to the fair started returning to their homes, however, they found the same company's motor oil being marketed in bulk in areas where the sealed container had not then been introduced. So well had the message of the Chicago advertising penetrated that the motorists refused in most cases to purchase this company's motor oil because they were convinced that if it was not sold in sealed containers, the retailer was one of the "bootleggers" that they had been warned against.

The demand for sealed lubricants was particularly noticeable among dealers who were quick to appreciate the advantages of the new marketing angle, the possibilities for increased sales and the ease of handling and small investment in stocks.

The possibilities for presenting the oil in an attractive manner have been enlarged by the work of one important glass company, which has developed a silk screen process for working the name and trade mark of the company into the bottle in color and in such a manner that the name lasts in the original colors for the full life of the bottle.

While sealed containers have been available for several years and have been used in a limited or experimental way by a number of companies it is only within the past twelve months that their employment has spread rapidly. The reason for this is quite understandable. During the past few years oil companies have been selling their products, for a good part of the time at least, on a profitless basis. Efforts have been made to effect economies in all possible directions and little encouragement has been given to proposals involving fresh financial outlays or to changes in existing equipment. As motorists become familiar with packaged lubricants, however, their preference for lubes in this form provides a demand that cannot well be disregarded. That undoubtedly is why so many companies are taking up the use of sealed containers or giving careful study to the subject.

Modern merchandising calls for attractive containers, ease of handling and economy.

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Gasoline Consumption

(Continued from page 112)

Germany, constituting approximately 70 percent of the consumption in Europe, have been able to show steady progress even through a depression, it seems very likely that with Russia becoming an ever increasing factor, a continuation of expanding consumption and an increase in automotive units may be expected.

Asia can boast of a greater consumption increase than any other continent and an increase in total automotive units second only to Africa.

Prospects for future development in both consumption and automotive units in Asia are exceptionally bright. Asia is only beginning to wake up to the importance of automotive transportation and the future should see an ever increasing rise in both consumption and total units.

Africa offers a remarkable example of steady progress with no setbacks. It is the only continent which has not failed to show an increase in both automotive units and gasoline consumption as well as per unit consumption. Her increase of 257.9 percent in automotive units in the ten year period is greater than any other continent while the total consumption trend is almost identical with that of Asia, especially after 1926.

Africa, like Asia, has only started to recognize the importance of automotive transportation. It seems likely that these two continents will continue to show the greatest increase for some time to come, not only in total consumption but also in units.

The only other group worthy of note is the Oceania group, including Hawaii and Guam. The 1,142,000 automotive units now operating in this group represents an increase of 189.3 percent over a period of ten years, a very good showing. In spite of the increase in units, however, the per unit consumption has been constantly declining so that today the per unit consumption of 295 gals. per unit is the smallest of any of the group by a very wide margin.

Rationalization Marks 1933 in Roumania

C. Osiceanu, Distinguished Petroleum Expert Finds that High Taxation Nullifies Cost Reduction and Discourages Industrial Recovery. Roumanian Consumption and Exports Increased in 1933.

CRUDE OIL PRODUCTION can be estimated for the whole year 1933 at 7,345,000 tons (51,415,000 bbl.) or practically the same as production in 1932 of 7,350,500 tons (51,453,500 bbl.).

Beginning with the year 1920 Roumania's output has shown a steady increase, the production for 1932 being 10.4 percent above that for 1931, and the latter year's production exceeding by 15.4 percent the figure for 1930.

The maintenance of last year's production on the same level is due in the first place to the restriction scheme imposed by the International Agreement during the first five months, when oil production was fixed at 18,600 tons (130,200 bbl.) per day. In the second place it was due to the prudence shown afterwards by the large companies who directed their exploitation work according to the international economic situation.

Drilling may be estimated at about 230,000 meters (759,000 ft.) indicating an increase of about 20,000 m. (66,000 ft.) as compared with 1932, due to the fact that the majority of the newly drilled wells were situated in fields where oil-pools were at great depths. At Boldesti the deepest well was more than 2,500 m. (8,250 ft.) deep.

The year's activity of the refineries is evidenced by the treatment of a quantity of 6,088,079 tons (42,616,553 bbl.) of crude oil during the first 10 months of the year, or about 7,348,000 tons (51,436,000 bbl.) for the whole year as compared with 7,010,216 tons (49,071,512 bbl.) of crude oil in 1932 showing a five percent increase of about 338,000 tons (2,366,000 bbl.).

Distribution of products is divided in the proportion of 80 percent for export and 20 percent for internal consumption.

The quantity exported during the first three quarters of this year was 4,506,300 tons (31,544,100 bbl.) as compared with 3,644,900 tons (25,514,300 bbl.) during the same period in 1932 and 5,166,257 tons (36,163,799 bbl.) for the whole year 1932. On the basis of the figures available at present the export figure for 1933 is 15 percent above that for 1932.

Domestic consumption also records an improvement showing an increase of 14½ percent for the first three quarters. Figures for the whole year will probably show still further improvement. During the first three quarters internal consumption was 941,408 tons (6,589,856 bbl.) as compared with 820,882 tons (5,746,174 bbl.).

In spite of all efforts in marketing of Roumanian oil products during the past year, prices, although superior to those of 1932, were not sufficiently high to be remunerative. Due attention was given by the petroleum industry to stimulating internal consumption, but the fiscal charges, represented an important impediment to all our efforts. Likewise railway rates constitute a second factor imposing a heavy burden on domestic consumption.

The financial results of export transactions were governed by the conditions of the world market which showed important decreases during the first six months of this year. Thus light benzine dropped 50 percent between January 1933, and June 1933, calculated f.o.b. Constantza. A sudden change, without too great an effect, has taken place during the second six months, when prices, going up, attained the initial level of the year. On the whole prices for petroleum products f.o.b. Constantza have remained superior to the f.o.b. Gulf parity.

The total value of petroleum products exported during the first nine months of 1933 was Lei 5,840,476,000 as compared with Lei 4,586,290,000 for the same period of 1932. The percentage increase in value for the whole year will probably be about 15 percent corresponding to a similar increase in the quantity exported.

Technical improvements in the Roumanian industry have tended to ameliorate economic difficulties by reducing the cost price per meter drilled and per tank wagon extracted.

Single tubing has been applied with success in the most important fields for deep drilling. In increasing the drilling speed, utilizing material of a superior quality, introducing electrical coring for the identification of the strata, using electric power for rotary drilling and applying geophysical methods, a further reduction of the cost per meter drilled has been effected.

Technically the principal aim was a reduction of cost price. A considerable reduction in cost, however, is impractical owing to the high railway rates and the fiscal charges. Not only in Roumania but also in all other countries, the fiscal authorities lay the greatest tax burdens on those industries which are still able to hold their own. In this connection I said in a speech which I made as President at the General Meeting of the Union of Chambers of Industry and Commerce:

> The heavy fiscal charges as well as the high railway rates, which very often exceed even the cost price of the goods, are preventing the cost of living from becoming cheaper, which is so badly needed today. It is for this reason that the producers, not only in our country, but also in other countries, in order to cope with these conditions, are obliged to compress the cost price by reducing the salaries and wages of the staff. But this curtailing of salaries is causing a reduction in consumption, which leads to stagnation in commerce and industry. We, the merchants and industrialists, are against this procedure, but in order to prevent it, it is necessary that the State give us its assistance, reducing the taxes which can hardly be borne, as well as the cost of transport.

Our petroleum industry began its activity in 1933 controlled by the International Agreement concluded with the Anglo-American groups in December 1932, and modified afterwards in the Conference of March 27, 1933.

Roumania was obliged to give notice of termination of this Agreement, making use of its contractual rights, only after a disproportionate increase in the output of crude oil in the United States, which, having officially been fixed by the Washington Conference in April 1933 at about 2,000,000 bbl. per day, had increased to 3,000,000 bbl. per day.

Although independent in its development after the denunciation of the agreement, the economic policy followed by Roumania is distinguished by the avoidance of a too great increase in production.

Roumania, today, is ready to cooperate, as she has done formerly, in the improvement of world market conditions, but with the observation and preservation of her rights and her position in the world petroleum market.

Improved Technique in Desulphurization

Short Time Contact Between Oil and Sludge-Acid with Rapid Separation by Centrifugals Comprise Advantages of Stratford Treating Process Described by M. B. Cooke and A. W. Hayford.

TREATMENT of light distillates as practiced to remove objectionable sulphur and nitrogen compounds, as well as gum forming constituents, and for the purpose of improving the stability and color of the gasoline may be classified under two headings. There is the chemical treatment, in which the use of sulphuric acid is most common, and the physical treating method employing a clay such as Fuller's Earth. This discussion will be limited to the chemical method, including a consideration of events leading up to the development of the most recent application of sulphuric acid, the Stratford Process, which was invented by Charles W. Stratford.

It is understood that after-treatment for the purpose of sweetening is carried on by either doctor solution or by hyprochlorite. In many cases, however, it is only necessary to after-treat with a solution of soda ash or caustic soda to render the gasoline non-corrosive and with an odor acceptable to the trade.

Inasmuch as the crude petroleum industry was born in Pennsylvania the early oils obtained by distillation were very sweet and low in sulphur and nitrogen compounds, simply because the crude was relatively free of these objectionable elements. However, when considerable quantities of sulphur bearing crudes were discovered it was found impossible to produce a satisfactory illuminating oil from these materials, since the existing treating methods did not remove the objectionable sulphur.

Immediately there appeared a rapid succession of treating methods designed to eliminate the offensive odors. Yaryan, Burkhart, Pitt and Frasch were more or less successful, but finally the use of 98 percent sulphuric acid in batch agitators was developed and this proved to be a suitable solution to the problem.

With the advent of the automobile, in 1894, the troublesome problem of disposing of gasoline was solved, but with the invention and successful commercialization of cracking new problems presented themselves. In the treating of straight run gasoline no particular difficulty was encountered, but when the refiner tried to apply the old agitator methods to the treating of the cracked product he found that the losses incurred were prohibitive. Whereas straight run fuel contained less than two percent unsaturates, cracked gasoline contained from 10 to 40 percent unsaturated compounds; hence it is easy to understand why conventional treating methods did not work well when applied to cracked distillates. Sulphuric acid removed not only the objectionable bodies such as diolefines, sulphur and nitrogen compounds, but also the useful and desirable olefines and aromatics.

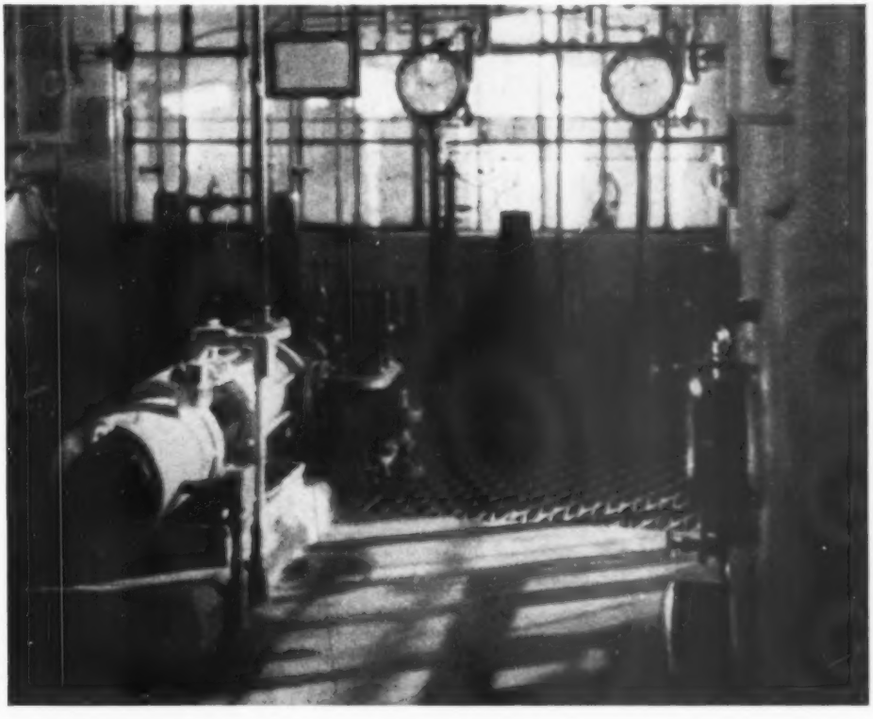
Refiners carried on research work on a large scale for several years and gradually evolved modified treating methods which cut down losses and improved the quality of the product. Development of the continuous treating plant and the application of circulating pumps to the batch agitators may be considered as outstanding improvements in the acid treating systems. By thus decreasing the time of contact of the oil, acid and acid sludge, most of the earlier difficulties were largely overcome.

It must be borne in mind that the abnormal losses incurred in the use of sulphuric acid were not due to an inherent defect of the acid; it was merely a lack of technique and machinery for its proper utilization. It remained for C. W. Stratford to introduce the necessary mechanical elements into sulphuric acid treatment before the defects and major objections to the use of acid were overcome. Stratford invented the counterflow short time contact, rapid sludge separation process which was absent from all previous processes. This was conducive to efficient desulphurization of petroleum distillates and in this field it appears to be an ideal process.

The Stratford system is being licensed by Alco Products Incorporated of New York.

The petroleum refining industry is well aware of the tremendous advances which have been made in the distillation and cracking divisions. In fact, it is felt that this development so absorbed the refining technologists that treating has not received its share of thought and development. With the discovery of large deposits of high sulphur crudes in West Texas, the treating problem received new impetus for a time but it did not

Stratford contactor showing controls in background.



develop into an active program due to the discovery of large deposits of sweet crude in Oklahoma and East Texas. The economic gains that can be won in improved treating methods are so great that careful consideration should be given to a rational program. Sulphur bearing crudes are being utilized even at the present time in large quantities and it is well known that cracked distillates and straight run gasolines require specialized treating methods for the removal of sulphur compounds.

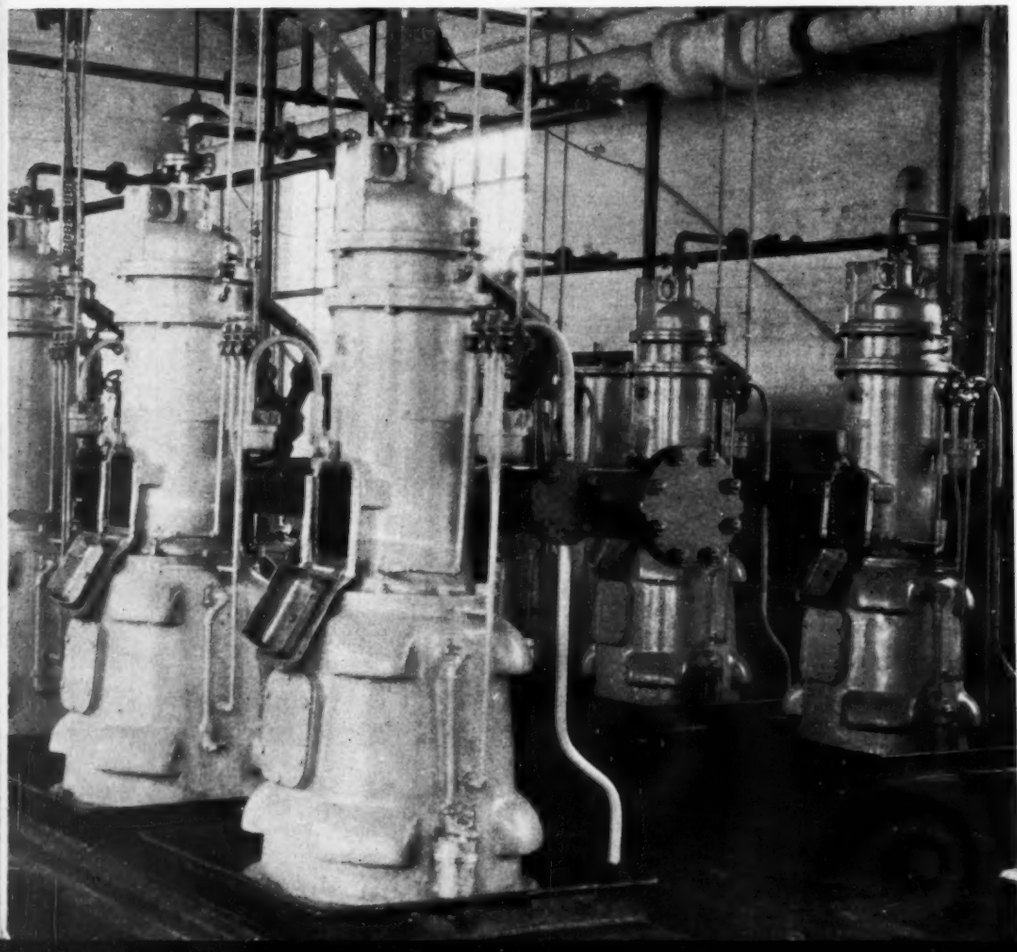
The ancient method of dumping acid into a cone bottom agitator and then blowing with air has been discarded because of insufficient mixing effect, long treating time and loss of valuable hydrocarbons. Agitators have been equipped with pre-mixers of the orifice type and increased efficiency has been the rule. In addition to this major step in advance, centrifugal pumps have been used for mixing acid and oil and circulating pumps added in other cases. The mixing problem was lessened by these developments but one important point was apparently left unsolved; that of long time contact of sludge and acid by-products with the distillate under treatment.

A detailed review of the prior art in the refinery operation will show a marked tendency toward the use of mechanical energy for accomplishing satisfactory dispersion and contacting. The problem of quick separation of reaction products held by the sludge acid has only been solved by the introduction of the centrifuge as a separating means. The centrifuge is unquestionably the only device available today which gives rapid, continuous and substantially complete separation of distillates from acid sludge.

The combination of the counter-current acid treating principle with high speed dispersion mixers followed by centrifugal separation of sludge was made by C. W. Stratford and is finding increased use at the present time. In this system, the optimum conditions, such as degree of dispersion of acid and distillate, time of reaction and short duration of the time of contact of acid sludge with the distillate are readily attained. The need for this is apparent when it is recognized that the speed of chemical reactions and the limit to which such reactions may proceed are defined almost entirely by the temperatures at which the reactions occur, by the degree of dispersion and intimate contacting of the chemical components involved in the reaction and by the period of time during which the chemical reaction is allowed to proceed before complete separation is made of treating agents from distillates. It is desirable to prevent the polymerization of valuable unsaturated hydrocarbons as far as possible. The Stratford process meets these requirements in every detail. The counter-current method of contacting also is conducive to minimum acid consumption and to the prevention of side reactions taking place. This is possible on account of the rapid separation of sludge acid at each stage. In this system the separated acid and distillate flow in opposite directions and as the acidity of the acid decreases, it is contacted with more highly reactive raw distillate. The fresh acid entering this counter-current flow system is contacted with distillate as it approaches the finishing stage.

The deleterious reactions previously mentioned are those little known but complex reactions that involve polymerization or condensation of the unsaturated hydrocarbons, formation of sulphuric acid or neutral esters with subsequent solution of the latter in the distillate. These reactions are accelerated by the presence of sulphuric acid and acid sludge and are known to occur within the period of several minutes. The more highly cracked the distillate under treatment, the greater the extent of these reactions. Heretofore, it has been practically impossible to desulphurize vapor-phase distillates successfully with sulphuric acid, owing to extreme polymerization losses and high concentration of organic sulphuric esters in the distillate that cause troublesome emulsions, but by judicious selection of acid strength, contact time, temperature, and immediate separation of reaction products many possibilities are opened up. It is important to obtain the optimum degree of treatment in minimum time and to separate the acid treated distillate from the acid sludge as quickly as possible before such reactions have time to occur to any appreciable extent.

The Stratford process is essentially a multi-stage, quick-contact centrifuge separation operation conducted on the counterflow principle. In brief, the raw distillate enters the plant and receives a treatment with sludge acid from the following stage. The mixture is delivered immediately to the centrifuge where the sludge is separated from the distillate, the sludge passing out of the system; the distillate is pumped to the next stage where it is again contacted with either fresh acid or sludge acid from the next following stage. Another contact and immediate separation of the components follows, the separated sludge again being pumped to the previous stage and the distillate delivered to the next stage for further treatment. Each treatment and separation is called a stage and the number of stages required will vary with the type of distillate being handled and the end-product desired. A 5,000 bbl. daily capacity three-stage Stratford treating plant, designed and erected by Alco Products Incorporated, has been in operation at a large eastern refinery for over a year. A description of this installation and the results obtained will serve to illustrate the practical application of this process.



Front view of centrifugals used in commercial installation of the Stratford treating process.

The distillate charged to the treating unit at the refinery mentioned is 100 percent West Texas, Dubbs and Cross pressure distillate containing 0.4 to 0.5 percent sulphur. It is necessary to produce a specification gasoline of 0.10 percent sulphur with minimum loss of octane and gasoline. In order to do this economically three stages were required. It is definitely established by experimental work that the additional stages were justified as they represented a considerable saving of acid. It was found advisable to provide a cooler on the incoming distillate as the summer-time temperatures are in excess of 90 deg. F. Fortunately, well water at 60 deg. F. is available at this plant. The size of the contactor and delivery lines were kept down to a minimum in order to reduce the time sludge is present in the distillate. For a charging capacity of 150 gal. per minute, the active contact time within the mixer is less than one second and the total time before separation is about three seconds.

The contactors used in this installation consist of a horizontal 8 in. by 12 in. shell having a multiblade propeller mounted on a shaft extending through a packing gland and directly connected to a motor. The internal arrangement is designed to produce intense mixing within a confined volume and is accomplished by a circulating tube around which the distillate passes many times a second. Fixed blades and baffles are used to prevent cavitation and to increase turbulence. By varying the speed of the motor, pitch of propeller or length of the circulating tube, it is possible to change the intensity of mixing, but for a given charging stock, the amount of contacting required will be fixed.

The outstanding features of the centrifuge used in this process are (a) high speed direct motor drive (b) large bowl capacity (c) vapor tight (d) rugged construction. The adjustment that governs the thickness of the sludge layer formed within the bowl is made by inserting discs of different sizes in the sludge or distillate discharge throat. The feed enters a central tube through the top and is flung by throwing devices to the side of the bowl at the bottom of the bowl where high centrifugal force effects a separation of acid sludge from the distillate due to the difference of specific gravity of the two liquids. The separating effect is approximately 7000 times that of gravity, which permits a high throughput and yet obtains a clean separation. The capacity of these centrifuges is placed at 1,500 bbl. per day, but as high as 1,800 bbl. per day have been successfully handled. Continuous runs for as long as three weeks are quite common without shutting down the centrifuges for cleaning purposes.

The products from the centrifuges flow by gravity to a vertical centrifugal pump. Owing to the gaseous nature of the products, it was necessary to pay particular attention to the design of these pumps in order to eliminate vapor binding. To overcome this possibility, the impeller is located at the bottom of a vertical vented drum which permits ready egress of vapors to a common vent line. The throat and impeller design permits low entrance velocities and negligible pressure drop. Delicately balanced liquid level controls on the two inter-stage distillation pumps maintain a minimum variation in level. Since there is no delay or accumulation in the system, a continuous and uniform flow is assured which is essential to efficient treating.

From the final stage, the distillate is pumped to an orifice mixing column through which caustic soda is circulated to neutralize the residual acidity. An intermediate water washing process may be included if the free mineral acid (largely dissolved sulphur dioxide) is sufficiently high to warrant this additional expense.

Two flow controllers are used; one regulates the distillate flow and the other the fresh acid feed. This type of control on acid feed has worked very satisfactorily. The acid feed rate, which is checked hourly in a small blow-case, does not vary so far as the eye can detect. Another proof of the uniformity of acid injection is the constancy of the temperature of the distillate leaving the strong acid contactor.

A second cooler is used to cool the distillate leaving the second stage prior to treatment with fresh acid because considerable temperature rise is experienced in the two acid sludge treatments. This second cooler delivers distillate to the final stage at 70–75 deg. and ordinarily leaves the treating plant at about 90 deg. F. The amount of cooling economically justified will have to be determined for each individual treating problem by balancing cost against the increase yield and improvement in quality of treated product.

Representative Operating Data from Stratford Process Installation

Acid Used, lb./bbl.	13.6
Acidity of Acid, percent H_2SO_4	98.3
Raw Pressure Distillate:	
End Point, deg. F	487
Sulphur, percent	0.435
Percent 420 E.P. Gasoline	88.9
Treated Pressure Distillate:	
Percent 420 E.P. Gasoline	85.75
Polymerization loss, percent	3.55
Sulphur in E.P. Gasoline, percent	0.100
SO_2 evolved, lb./bbl.	0.05
Color Bottoms, N.P.A.*	4½
Treating Loss (Tank gauges) percent	6.0
Sulphur in E.P. Gasoline Lab. Treats. percent	0.135

* From Rerun Unit cutting to 405 E.P.

From an economic standpoint the merits of the Stratford Process have a greater appeal in the desulphurization of distillates that require a moderate or larger amount of acid to produce a satisfactory specification gasoline or where distillates containing a high percentage of unsaturates such as vapor phase distillates cannot be treated by the ordinary method. The principal sources of return from this process are derived from the increased yields of gasoline and distillates, conservation of octane, decreased corrosion to rerunning equipment and better quality of fuel oil. Additional incidental advantages to be obtained are a sludge free of coking material that is readily separable, and elimination of settling tanks so that the entire treating unit occupied only a

Centrifugal pump in center with contactor in right foreground: view of part of a commercial installation of the Stratford process.

fraction of the space required for a continuous treating system.

Alco Products Incorporated have at their experimental laboratory at Dunkirk, New York, a complete 3-stage acid treating unit where samples of distillate are investigated to determine the effects of the many variables that enter into acid treating operation. In this miniature plant many of the control factors such as strength of acid, temperature, time of contact, effect of previous fractionation or effect of maximum oil temperature in the rerunning operation can be determined.

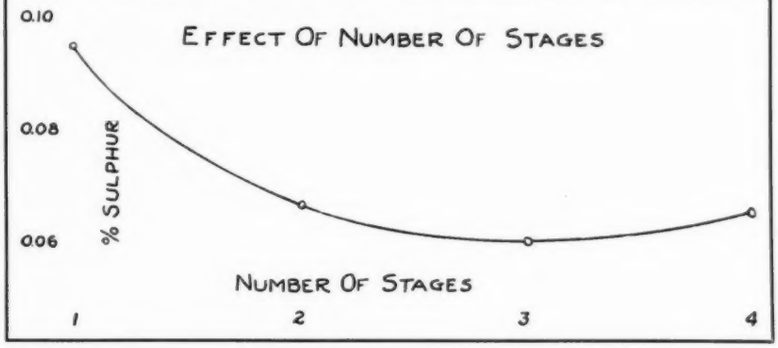
This article has dealt largely with the treatment of pressure distillate, although this by no means excludes other types of petroleum products. In fact, the only prerequisite for the application of the multi-stage treating plant is that the sludge be sufficiently fluid so that it can be pumped throughout the system.

When the Stratford Acid Process was first used the experimental work was carried on at a refinery where 1,000 bbl. per day of high sulphur distillate was treated. After the successful application of the process on this scale was demonstrated, a 5,000 bbl. plant was completed. It then became necessary to construct a model treating plant of reasonable size. This was done at Dunkirk, N. Y. and the small plant has proved to be invaluable in predicting yields, quality of treated distillate and in ascertaining other important data from unknown samples of distillates. In order to arrive at some definite conclusion as to the exactness of results attained in this pilot plant when compared with commercial operation, distillate was shipped from the commercial plant for use in the pilot plant. A series of runs soon revealed that the small pilot plant duplicates results obtained in commercial operation in almost every particular. Samples of the raw distillate charged to the commercial plant as well as treated distillate were examined and compared with the treated distillate from the pilot plant.

FIGURE I

SULPHUR CONTENT OF TREATED 400-405 E.P. GASOLINE

EFFECT OF NUMBER OF STAGES



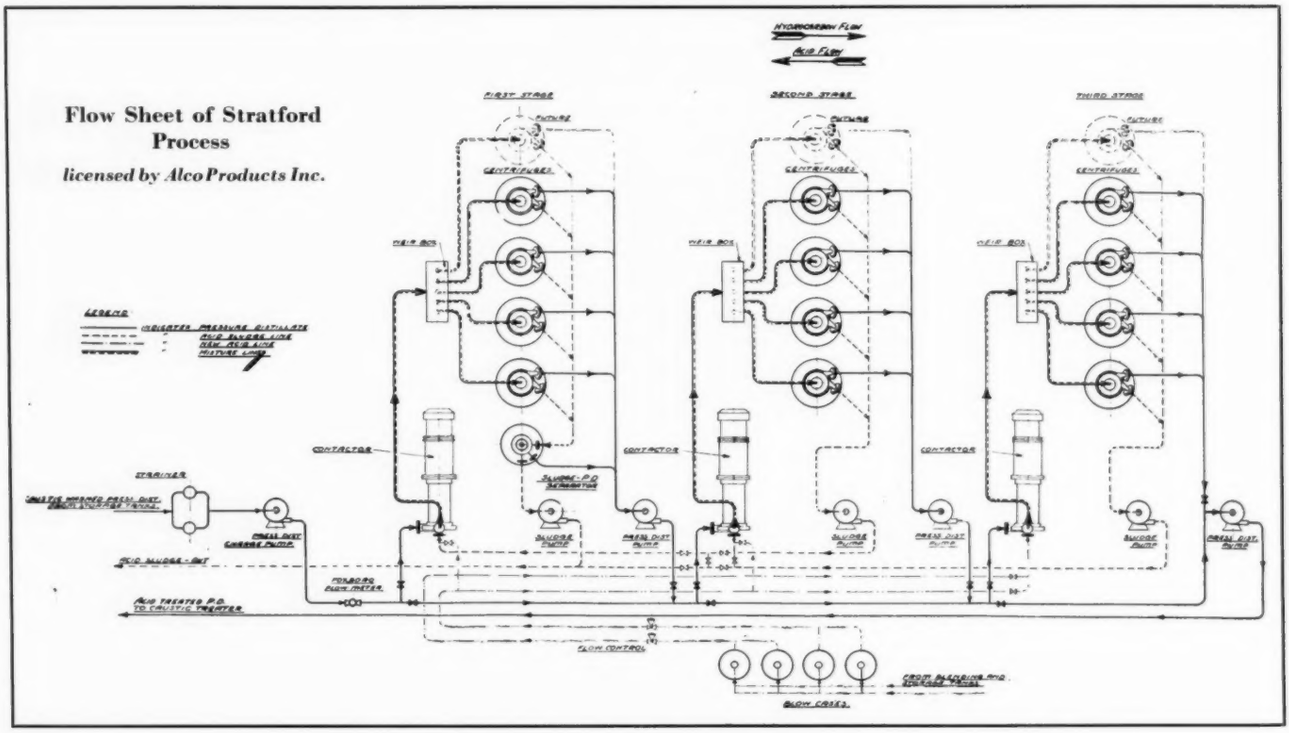
Comparison of Results Obtained in Experimental and Commercial Plant Operating on Raw Distillate

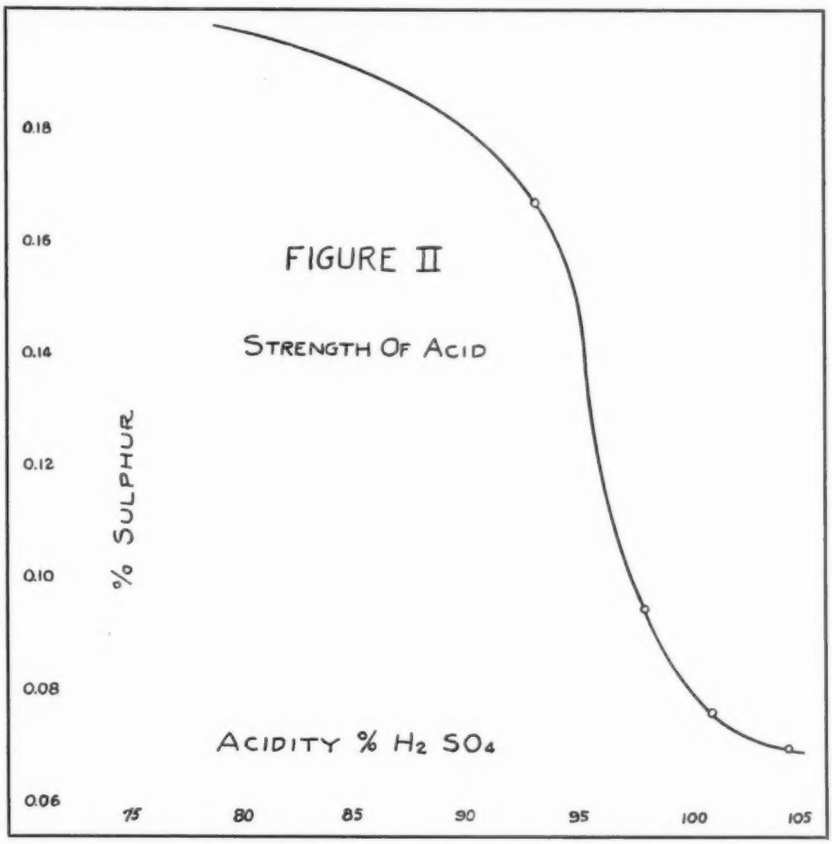
	Experimental Plant	Commercial Plant
Lbs. 98 percent acid/bbl.	13	13
Sulphur in distillate 0.327 percent		
Sulphur in E.P. Gasoline percent	0.073	0.09
Treating Loss percent	3.4	3.3
Polymer Loss percent	3.7	3.8
Octane (Motor method)	66.7	66.0

These results indicate very strongly that the pilot plant is a tool which can be used with safety in evaluating or predicting results when the Stratford acid system is used.

Flow Sheet of Stratford Process

licensed by Alco Products Inc.





It is often necessary to demonstrate why three stages of treating are economical and desirable. As an example, the question is frequently asked: "Why is three stage treating better than two or even one stage treating?" In order to explain this it has been found expedient to set up the experimental plant in a flexible manner so that one, two or three stages can be used. Data obtained prove quite conclusively that maximum desulphurization of a distillate is obtained when the sludge acid is used twice on the distillate before the strong acid is applied. Figure I indicates the effect of the several stages. Plant operation has been checked in one instance and corresponds well with the laboratory data.

It will be noted that the amount of desulphurization increased with the number of stages up to three, after which an additional stage does not effect additional desulphurization. In fact, the data show a slight increase in sulphur content but this may be due to an analytical error.

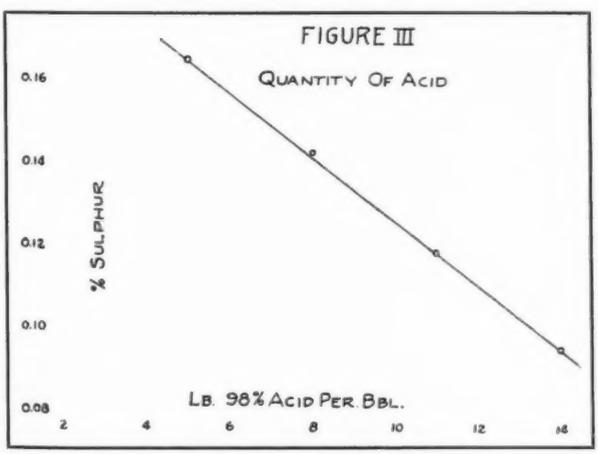
The graph (Figure II) indicates that there is a marked increase in efficiency in desulphurization between 95 percent and 100 percent sulphuric acid above which there is a tendency to level out. Less than 95 percent acid is relatively ineffective for desulphurizing purposes.

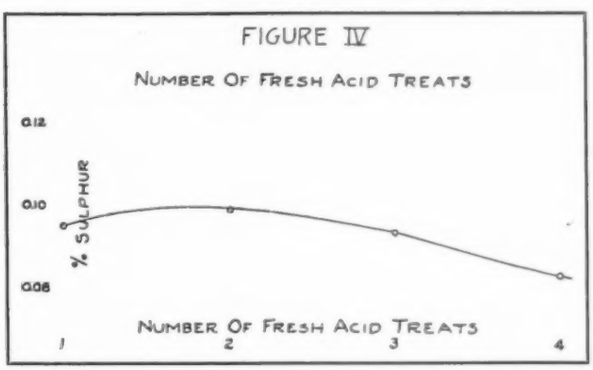
Figure III indicates that desulphurization is directly proportional to the amount of acid used. This is logical and is in line with past experience.

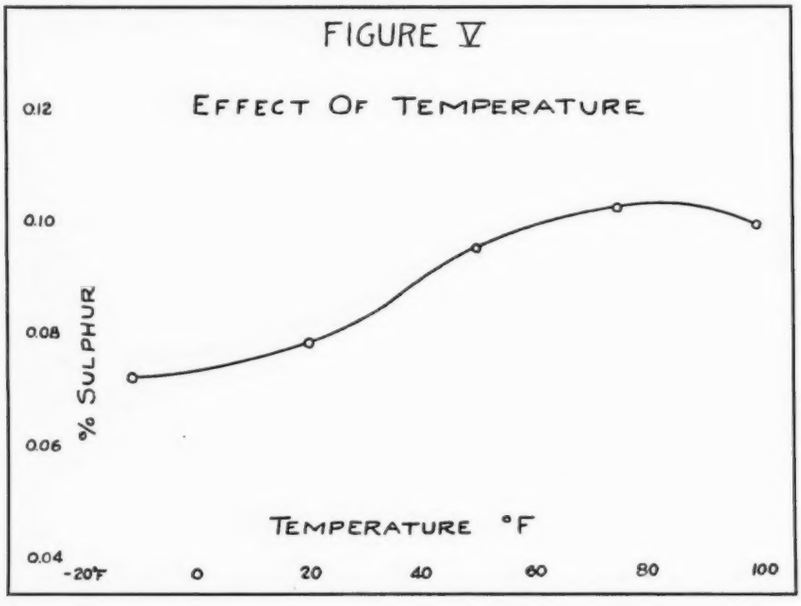
There has been a noticeable difference of opinion among oil technologists as to the merits of adding the acid in portions to the oil being treated. In order to ascertain the advantages, if any, a series of treats were made, where the injections of acid were made in more than one portion. Figure IV indicates that, aside from the so-called "dehydrating" effect of the first acid addition, there is a slight increase in desulphurization when the total acid to be used is added in several applications. The gain is small and does not account for the increased sulphur removal obtained when three stages are used in the Stratford system, employing two stages of sludge acid treating and one of fresh acid.

The effect of variation in temperature was studied and it was found that there is apparently an increased desulphurizing effect with rising temperature but this appears to reach an optimum point at 70–80 deg. F. This effect is shown graphically in Figure V. The reason for this is to be found, it is believed, in the side reactions which are accelerated at a faster rate than is the desulphurizing effect. Accordingly, cooling between stages in the Stratford system is practiced in some cases, especially in warm climates where the distillate reaches a temperature of 90–110 deg. F. in storage or process tanks.

Additional data from the experimental







Stratford treating plant indicate that it is possible to obtain the same degree of desulphurization in the three stage system employing 5 lbs. of 98 percent sulphuric acid as is obtained in a single treat with 10 lbs. of 98 percent acid. Another series of runs was made in which a high sulphur distillate was used which required 10 lbs. of 98 percent acid to reduce the sulphur content to less than one-tenth of one percent. The same distillate was treated with 15 lbs. of 98 percent acid in one stage and the same sulphur reduction was accomplished but the distillate showed 1.5 octane points lower in rating than the 3 stage treated material. This comparison is most striking and is representative of the advantages of multistage treating.

▼

Initial Steps in Italy's New Oil Regime

As a first step in inaugurating the new policy of encouraging the establishment of a domestic petroleum refining industry in Italy, certain changes in the tariff have been effected during February of this year. These modifications have been referred to in general terms in the preceding issues of WORLD PETROLEUM. Details of the changes in tariffs are now available and are given below.

The broad purpose of the change in policy is to facilitate imports of crude petroleum by removing the tariff entirely. At the same time the tariff on finished products is decreased to a point where the duty will simply furnish adequate protection for a domestic refining industry, which Italy hopes to have completed within the next year and a half or two years. Crude supplies will continue to be drawn from present sources in Russia, North and South America and Roumania. Should the Mosul Oilfields project, in which the Italian government has an interest, be successfully developed, Iraq probably will supply part of the crude to the Mediterranean coastal countries including Italy.

Eventual independence of foreign sources of supply over which the Italian government at present has little control seems to be the purpose of the new regulations. These regulations which will indicate the details of the application of the new laws to importation and manufacture of petroleum and products in Italy have not as yet been published officially.

The law of February 7, provides for the complete removal of the customs duty of 220 lire per ton ($2.67 per barrel) on crude oil destined for refining and the removal of the additional 15 percent ad valorem customs duty on crude for refining; crude imported into Italy, therefore pays no import tax and no sales tax. The regulations governing importation of crude, have not, however, been issued as yet. Crude oil for direct use as fuel pays the 15 percent ad valorem duty only, which at the present value of crude imported comes to approximately 24 lire per metric ton ($0.29 per barrel). Both sales tax and import duty have also been removed from distillate imported for further refining. Distillate of various densities imported to be used directly as fuel pays a 15 percent ad valorem import duty which amounts to approximately 24.7 lire per metric ton ($0.30 per barrel) and a sales tax of 300 lire per ton ($3.50 per barrel).

Imported gasoline pays about the same total rate as before the decree of February 5, 1934; formerly a specific duty of 881 lire per ton plus a 15 percent ad valorem duty working out at about 50 lire per ton, plus a sales tax of 800 lire per ton made a total tax of 1,731 lire per ton ($21.02 per barrel) against the present import tax of but 120 lire per ton and a sales tax of 1610 lire per ton making a total tax of 1730 lire per ton ($20.94 per barrel).

Imported lubricating oils have had the specific import duty reduced from 440 lire per ton ($5.34 per barrel) to 250 lire per ton ($3.03 per barrel); the 15 percent ad valorem duty has been removed, which amounts to a further reduction of approximately 75 lire per ton ($0.91 per barrel). The sales tax on the other hand has been increased by the February decree from 220 lire per ton ($2.67 per barrel) to 550 lire per ton ($6.68 per barrel). The net result is that lubricants now pay a total tax of 800 lire per ton ($9.71 per barrel) against a former total tax of 735 lire per ton ($8.92 per barrel).

Illuminating, or kerosene oils now pay a duty of only 120 lire per metric ton ($1.36 per barrel) imported, against an import duty of 881 lire per ton ($9.98 per barrel) and a 15 percent ad valorem duty which worked out at approximately 30 lire per ton ($0.34 per barrel) as the import rate prior to the decree of February 5. The sales tax, however has been increased from 140 lire per ton ($1.59 per barrel) before the new law to 930 lire per ton ($10.54 per barrel) at present. The total tax paid on imported kerosene, both sales and import, is about the same now as before the February law; i.e., 1050 lire per ton ($11.90 per barrel).

From the above figures it will be seen that the policy of the Italian government is to readjust tariff schedules to encourage the refinery program and at the same time to make up the loss in revenue from lower tariffs by an increase in the sales tax on petroleum products.

Tulsa Exposition in May

Tulsa International Petroleum Exposition Attracting Interest in U. S. and Abroad as World's Largest Industrial Show Composed of Exhibits Valued at Ten Million Dollars.

William G. Skelly

THE LARGEST industrial show of any one industry in the world, will be the eighth International Petroleum Exposition and Congress to be held at Tulsa, Oklahoma, May 12 to 19. Exhibits valued at more than $10,000,000 representing the producing, refining, transportation and marketing divisions will be on display according to William G. Skelly, president, Skelly Oil Company, and president of the Exposition.

"At the last exposition, held in 1930, exhibits and delegations in attendance represented 21 nations from five continents and 38 states of the United States and from inquiries received it is apparent that equal representation will be in attendance again this year," said Mr. Skelly.

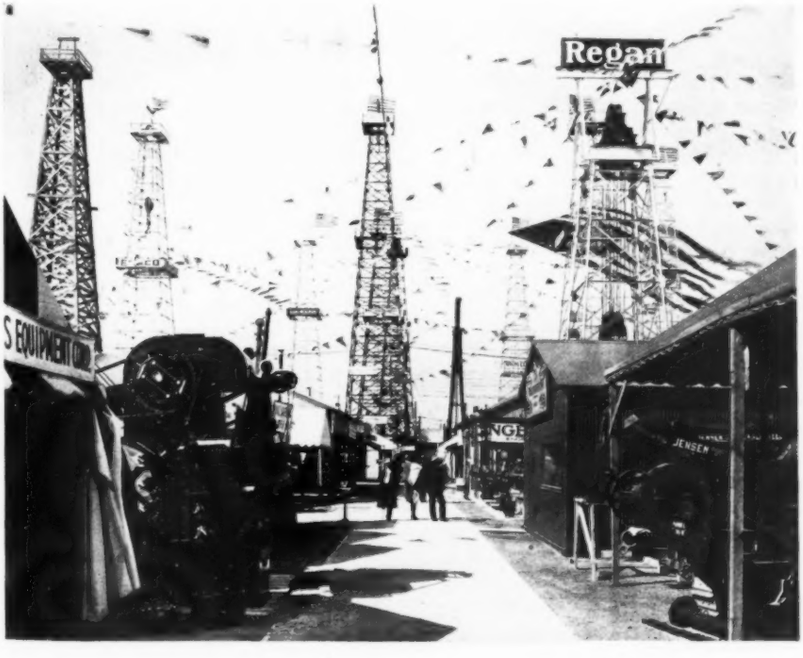
"The United States government has approved the exposition under a resolution passed by Congress and is sending out official government invitations to more than 50 countries of the world and to each of the 48 states of the United States, inviting them to exhibit samples of fabricated and raw products of all countries used in the petroleum industry.

"This means that now is the opportune time for manufacturers to display new machinery and inventions which have been perfected by engineers and scientists over the past three years and which, due to depressed business condition, have not as yet been generally introduced to the industry.

"The exposition has been endorsed by The American Petroleum Institute; Independent Petroleum Association of America; Western Petroleum Refiners Association; Natural Gasoline Manufacturers Association; American Association of Petroleum Geologists; Mid-Continent Oil and Gas Association; United States Congress; United States State Department; United States Bureau of Mines; U. S. Geological Survey; and the governments of many other oil producing countries who have sent official representations to the exposition and congress.

"Readjustment of foreign exchange, Russian recognition, and other factors will make it much easier for operators from abroad to buy the American petroleum industry equipment they have always preferred."

Drilling and pumping equipment at the 1930 Petroleum Exposition attended by representatives of 21 nations.



Exhibits divide themselves into the four major divisions of the industry.

The production division will have a replica of the first oil well drilled by Col. Edwin Drake at Titusville, Pa., in 1859, actual wells with modern $125,000 derricks and rotary drilling equipment capable of going down two miles or more in contrast with the 69½ ft. depth of the Drake well and almost every conceivable type of derrick and drilling tools used today. Actual drilling will be carried on.

An automatic pump station valued at $90,000 will head the list of exhibits portraying the transportation or pipeline division. This station is being installed by the American Society of Mechanical Engineers and represents the latest in transportation efforts. This exhibit will show how oil is taken from wells by stations, manned only by machinery and which automatically shut down when tanks are full, open up when they get low, and quit should a break occur in the line.

In the refinery division there will be a display showing a model of the first refinery which was built in Titusville, Pa., shortly after the Drake well came in. This refinery merely refined crude oil, obtaining gasoline, kerosene and oil

(Continued on page 137)

International News and Reports

A NEW STOCK company, the Toyo Sekiyou Kaisha, said to be a subsidiary of the North Saghalien Petroleum Co., has started the erection of a refinery at Tsouroumi, near Yokohama, Japan. The plant at first will have an annual capacity of 60,000 bbl. a year.

THE URUGUAYAN National Fuel Administration has engaged a Roumanian oil expert, Traian T. Serghiesco, to make a thorough examination of the country and report on the possible existence of oil deposits. Mr. Serghiesco has had much experience in oil explorations in Roumania, Poland, France and South America, and has served as chief of the Argentine oil exploration service at Commodoro Rividavia.

IN APRIL, 1933, the British government laid a tax of £1– per ton on heavy oils used as fuel; the object of this measure was to stem the trend of British industries away from the use of British coal. A recent questionnaire sent to a large number of factories has revealed that the expected result has not followed. Relatively few have been induced to turn to coal as a result of the tax; most have simply paid it and have added it to the selling price of their products.

A LIST of a great number of valves for use in the oil industry has recently been published by the British firm of Richard Klinger Ltd. The catalog is conveniently bound in stiff covers and may be added to from time to time. Valves for various purposes are described on a text page, with working drawings of the valve on the facing page. The catalog is to be used in connection with Klinger's full catalog of equipment, being only supplementary and not exhaustive.

ONE UNIFIED service now connects the oil centers of Bucharest, France, Italy, Persia, Iraq and Egypt through Wagons-Lits Cook Agencies which arrange for trips to any of the above centers and many other points on the Simplon-Orient and Taurus Express lines. Where rail connections have not been completed, motor bus transportation is available. Breaks in the rail connections occur between Tripoli and Haifa, between Telziouane and Kirkuk and between Khanikin and Teheran. Modern sleeping and dining equipment is available, arrangements are made for simplifying frontier formalities and the purpose of creating one homogeneous service has been very well fulfilled.

GOVERNMENT of Netherland India is reported to be preparing a law to grant new oil concessions to a group of companies, including Shell, Bataafsche Petroleum, Nederlandsche Koloniale Petroleum, Nederlandsche Pacific Petroleum and the Biliton Mij. to prospect for oil in New Guinea. The terms of the concession will require the companies to do exploratory work on a total area of 10,000,000 hectares, from which they will select 1,000,000 hectares for exploitation. The concessionaires are organizing a joint expedition which will thoroughly examine the assigned area, and will have the cooperation of Dutch military aviators.

PLANS HAVE been completed by the Filtrol Company of California to construct a new plant which is to be located in the Mid-Continent area. According to Lester L. Robinson, chairman of the board, and G. Howard Hutchins, president of the Filtrol Company, growing demand for Super-Filtrol in the Mid-Continent and on the Atlantic seaboard necessitated this move on their part. Super-Filtrol is an acid-activated clay used in refining and bleaching animal, mineral and vegetable oils. The growing demand for Filtrol in the petroleum industry comes largely from lubricating oil refiners.

UPON URGENT representation by Roumanian oil interests the government has decided to revise rail freights on petroleum products from the oil fields to the ports. This action has had to be taken because of impending competition with Iraq oil that arrives at seaboard with a transport cost of only 250 lei per ton for a journey of 2500 kilometers, whereas Roumanian oil has to pay 360 lei for a rail trip of only 300 kilometers from Campinas, the chief town of the oil district, to wharfs at Constanza. To neutralize this competitive advantage of Iraq oil the Roumanian oil freight rates were reduced in March. This action will affect not only Iraq oil, but U. S. Gulf exports as well, because the same reduction in rail freights will better enable Roumanian oil to compete in the Belgian, English, Dutch and Scandinavian markets.

THE GOVERNMENT of Chile has asked the National Congress to change the existing petroleum law so as to allow foreign enterprises to participate in the search for and exploitation of oil deposits. Heretofore all prospecting for oil has been reserved to the government. It is intended that the extent of the concessions granted to foreigners shall not exceed 120,000 hectares, and that the foreign capital admitted into new enterprises shall not exceed 40 percent of the total.

PROCEEDINGS OF THE WORLD PETROLEUM CONGRESS (Institution of Petroleum Technologists, London, £1–15 s.; Congress members, 30 s.) The first volume of the proceedings of the World Petroleum Congress held in London last July, has just been issued, a comprehensive work bound in cloth covers, edited by A. E. Dunstan and George Sell. This first volume devotes 600 pages and numerous illustrations to Geological and Production papers which are reproduced in full together with discussions. The second volume will be available in the very near future and will be followed by two more volumes covering the entire Congress. The present work is carefully indexed and contains a tremendous amount of practical and timely information.

Crude Production in Italy

TOTAL crude oil production in Italy during 1933 was 372,418 bbl., according to D. A. Greig, of Fornovo Taro, Italy, in a recent paper before the A.I.M.E., New York. The total footage drilled by the three producing companies was 80,779 ft. Since June 30 last year the A.G.I.P. has drilled a total of 112 wells in Italy. This government controlled oil company is one of the three concerns now drilling for oil in that country.

World Oil Production—Official Figures for 1934 Revised

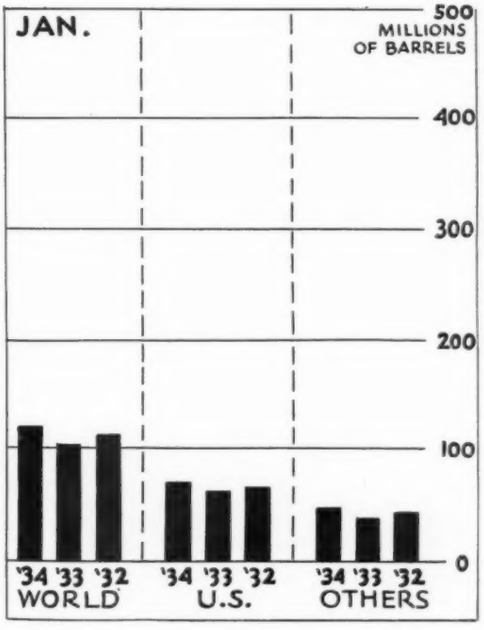
All figures furnished direct to WORLD PETROLEUM by Governments, except where otherwise specified

(Figures in U. S. Barrels—Conversion ratio 7 bbl. = 1 ton)

Country	February 1933	March 1933	April 1933	May 1933	June 1933	July 1933	August 1933	September 1933	October 1933	November 1933	December 1933	January 1934
United States	61,029,000	75,302,000	65,313,000	84,747,000	82,841,000	84,387,000	85,239,000	78,186,000	76,017,000	69,755,000	72,060,000	71,976,000
Russia	10,162,600	11,003,300	11,824,400	12,794,600	12,489,400	11,837,000	13,402,200	14,340,200	14,595,000	13,479,200	12,591,600	13,356,000
Venezuela	9,985,711	10,324,328	9,340,870	9,380,893	9,354,387	10,197,425	10,367,511	10,231,410	10,852,653	10,843,910	11,253,704	11,091,514
Roumania	3,661,749	4,009,649	3,949,001	4,104,919	4,490,220	4,755,600	4,562,551	4,420,486	4,502,127	4,000,000	4,515,000	4,506,229
Persia[2]	2,929,668	3,683,386	3,984,519	4,370,835	4,452,000	4,648,000	4,669,000	4,109,000	4,549,867	4,199,797	4,422,096	4,164,790
Mexico	2,543,443	2,825,021	3,011,973	2,857,620	2,805,353	2,950,803	2,893,211	2,605,840	2,429,072	2,833,630	3,259,258	3,113,707
Netherland India	3,031,051	3,390,051	3,028,639	3,357,214	3,280,382	3,249,428	3,172,568	3,186,435	3,179,043	3,127,047	3,414,754	3,500,000[1]
Colombia	1,035,273	1,218,626	1,093,410	1,169,238	1,113,328	1,189,655[1]	1,164,104[1]	1,085,885[1]	1,087,397[4]	999,253[1]	995,605[1]	1,012,780[4]
Argentina	1,153,500	1,140,000	1,051,000	1,210,300	1,181,500	1,180,000[1]	1,180,000[1]	1,180,000[1]	1,180,000[1]	1,180,000[1]	1,180,000[1]	1,180,000[1]
Peru	806,785	942,940	988,766	1,807,565	1,750,206	1,183,527	1,284,726	1,035,338[1]	970,427[4]	998,066[4]	1,178,004[1]	1,188,540[4]
Trinidad	778,842	839,857	834,876	816,080	772,626	759,076	780,929	755,676	818,184	788,970	799,484	852,189
British India	669,617	761,302	708,703	729,669	741,244	700,000[1]	700,000[1]	700,000[1]	700,000[1]	700,000[1]	700,000[1]	700,000[1]
Poland	299,845	329,224	318,619	326,900	326,830	336,553	332,934	315,000	320,000[1]	309,624	311,500	312,333
Sarawak	194,166	214,984	196,595	302,385	184,250	196,756	194,327	182,602	186,431	179,648	175,000[1]	175,000[1]
Japan and Taiwan[1]	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000
Egypt	126,861	131,964	124,103	138,348	137,620	136,752	143,836	133,903	125,786	128,450	127,421	122,934
Ecuador	119,345	128,504	121,647	128,226	141,640	147,889	148,467	139,826	141,379	133,591	138,198	132,655
Canada	73,087	87,218	84,974	89,754	113,447	99,510	100,602	97,342	97,132	108,304	113,677	124,425
Germany[3]	121,835	141,183	129,591	134,666	130,200	141,414	153,174	155,778	160,951	157,808	155,491	152,292
Iraq[1]	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
France[1]	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000
Others[1]	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000
Total	99,099,378	116,850,537	106,481,686	128,744,212	126,682,633	128,473,388	130,866,140	123,237,721	122,289,449	114,299,298	117,667,792	118,038,388

[1] Estimate. [2] Anglo-Persian Oil Co. figures revised; fuel oil returned to the ground has been deducted. [3] Thuringia estimated 7,000 bbl.; official figure for Prussia. Sakhalin Russian included with Russia. Sakhalin Japanese included with Japan. [4] International Petroleum Company's figures.

Comparison of crude oil production in the United States, all other countries and total for the world during January, 1932, 1933 and 1934



Official Crude Oil Production Figures for 1932, 1933 and 1934

(Barrels of 42 U. S. Gals.)

	Total 1932	Daily Average 1932	Total 1933	Daily Average 1933	Total 1934	Daily Average 1934
United States	785,159,000	2,145,243	898,874,000	2,462,670	71,976,000	2,321,806
Russia	149,719,000	409,070	148,901,900	407,950	13,356,000	430,839
Venezuela	119,596,512	326,766	120,882,802	331,186	11,091,514	357,791
Roumania	50,491,205	137,954	50,971,200	139,647	4,506,229	145,362
Persia	45,122,455	123,285	49,581,280	135,840	4,164,790	134,348
Mexico	32,802,285	89,624	33,904,882	92,890	3,113,707	100,442
Netherland India	39,584,027	108,153	38,512,663	105,516	3,500,000	112,903
Colombia	16,384,956	44,768	13,157,127	36,047	1,012,780	32,670
Argentina	13,166,900	35,975	13,954,800	38,232	1,180,000	38,065
Peru	9,899,266	26,026	13,923,281	38,146	1,188,540	38,340
Trinidad	10,023,780	27,387	9,560,039	26,192	852,189	27,490
British India	8,600,312	23,500	8,543,429	23,407	700,000	22,580
Poland	3,905,230	10,670	3,865,129	10,589	312,333	10,075
Sarawak	2,274,043	6,213	2,288,464	6,270	175,000	5,645
Japan and Taiwan	2,340,000	6,393	2,340,000	6,411	195,000	6,290
Egypt	1,742,370	4,760	1,591,495	4,360	122,934	3,965
Ecuador	1,573,857	4,300	1,622,624	4,446	132,655	4,279
Canada	1,054,373	2,880	1,147,825	3,144	124,425	4,013
Germany	1,824,019	4,983	1,712,823	4,692	152,292	4,912
Iraq	1,200,000	3,300	1,200,000	3,288	100,000	3,226
France	552,000	1,508	552,000	1,515	46,000	1,500
Others	432,000	1,180	432,000	1,184	36,000	1,160
Total	1,297,477,590	3,544,940	1,417,419,763	3,883,342	118,038,388	3,807,690

Foreign Oil Legion

M. J. BERTIN of the Socony-Vacuum Oil Corporation has just returned from Italy where he has been looking over the oil refining possibilities. The Vacuum Oil Co. S.A.I. will probably erect a complete refinery in that country.

▼

E. C. BLEECKER, formerly chief geologist at Maracaibo of the Venezuela Gulf Oil Corporation, and now located in the company's New York offices, is in Eastern Venezuela visiting the oil properties of the company in that territory. Due to the SS MAURETANIA starting on a cruise when he sailed he was able to make the trip to Trinidad, the first stage of his journey, in four days.

▼

GEORGE S. WALDEN, senior vice president of the Standard-Vacuum Oil Company, and vice president of the N.K.P.M., recently returned on the SS BREMEN from Europe, where he had been in connection with the joint marketing operations of the Jersey Standard and Socony Vacuum in the Far East, the story of which was given in WORLD PETROLEUM for March.

▼

George S. Walden

Vernon Smith

W. A. BROWN of the Venezuela Gulf Oil Corporation's Lagunillas camp has taken over pro tem charge of drilling operations on the Barco concession in Colombia, during the absence on vacation of Mr. Gilchreas.

▼

CAPTAIN F. W. HAIG, chief aviation officer of the Vacuum Oil Company recently arrived in London by air from Australia for the purpose of studying the development of aviation. He now is flying around Europe in the Vacuum's Dragon Moth G. plane A.C.G.K. Formerly Capt. Haig was a member of the Royal Australian Air Force and saw service in the Near East during the war.

▼

VICTORS ROSS, vice president, Imperial Oil Company, Ltd., author of several books on petroleum, died from pneumonia on February 23, following a brief illness. Toward the end of the war Mr. Ross was appointed assistant to Walter C. Teagle of the Jersey Standard and the following year became vice president of the Imperial Company.

VERNON SMITH of the Shell Oil Company has succeeded O. W. Darch as general manager of the Shell Company for Australia and New Zealand.

Mr. Smith was born in England, educated in Paris and at Cambridge where he took his degree of B.A. with First-Class Honours. During the War Mr. Smith served with the Duke of Wellington's regiment, later transferring to the Indian Army and was distinguished for brilliant service in the near East.

On his return to England he joined the Shell Company, and his overseas experience began immediately. After three years in various positions in the Singapore office, he was appointed branch manager of the Malay State of Perak, whose head office is in Ipoh, in 1923. After two years in Ipoh he was appointed branch manager at Kuala Lumpur, the capital of the Federated Malay States. Two years later he became sales general manager at Singapore, and three years ago he took up the position in Melbourne of assistant general manager for Australia and New Zealand. The photograph of Mr. Smith is reproduced through the courtesy of the Editor of SHELL MAGAZINE.

▼

ROBERT L. HAGUE, president, Standard Shipping Company, New York, recently returned from Europe.

R. L. Hague

United States

	Daily Crude Oil Production Bbl.	Daily Runs to Stills Bbl.	Motor Fuel Stocks Bbl.	Imports for week Bbl.	California Shipm. East for week Bbl.
Week Ending Feb. 10.....	2,343,000 465,000*	2,375,000	54,581,000	575,000	148,000
Week Ending Feb. 17.....	2,355,500 476,000*	2,365,000	55,601,000	922,000	616,000
Week Ending Feb. 24.....	2,291,500 478,000*	2,425,000	56,528,000	992,000	1,037,000
Week Ending Mar. 3.....	2,253,000 485,000*	2,345,000	57,375,000	1,084,000	678,000
Week Ending Mar. 10.....	2,313,900 428,600*	2,300,000	58,003,000	757,000	391,000

Underlined figures indicate improvement in statistical position—decrease in production, runs to stills, gasoline stocks and imports.

*Estimated total production of The Rusk-Gregg field, East Texas; official and unreported.

Major Developments in Oklahoma

THE WILDCAT drilling campaign which started in Oklahoma late in 1933, and which gained momentum in 1934, resulted during the past two months in a number of new discoveries of oil fields; while pools discovered earlier were being actively developed.

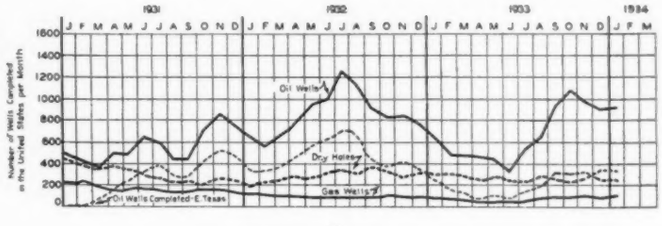
In Osage County Mead Brothers and Beck No. 1 in section 10-T25N-R6E extended the famous Burbank field to the south finding the Burbank-Bartlesville sand of lower Pennsylvania at 2,807 ft. and penetrating it to 2,845 ft. for a 1,500-bbl. producer. Same operators No. 2 and No. 3 in the same quarter section were subsequently completed for 2,000 bbl. and 2,700 bbl. respectively; while Carter Oil Company (S.O.N.J.) brought in a 2,500-bbl. producer offsetting the discovery well, and the Gypsy (Gulf), Manahan et al. extended the new pool one mile to the north into section 3 with a 1,600-bbl. oil well. At this time the five completed wells in South Burbank extension produce around 10,000 bbl. per day, while the 22 drilling wells will raise the potential production within March and April to 50,000 bbl. per day. The producing area of the South Burbank field will cover in its most prolific portion about 3,200 acres and the prevailing spacing of wells of one to ten acres will therefore result in drilling of 320 wells within the next few months. A cumulative recovery of 9,000 bbl. per acre in the old Burbank field indicates a reserve of 28,800,000 bbl. in the new south extension. The Carter Oil Company (S.O.N.J.) through a recent purchase controls about 640 acres in the new extension and is drilling 10 wells, with other acreage divided among other operators. About 800 acres in the field remain unleased, but will be probably sold by the Osage Indian Agency at auction within a few months. At the last sale on February 7, 1934, the leases sold in the South Burbank field brought the largest prices in several years, the Phillips Petroleum Company paying the highest price of $201,000 for the NW/4 of section 15-T26N-R5E, while the four quarter sections sold brought $475,000. The South Burbank pool was discovered on the strength of the subsurface evidence. The crude oil in the district is in great demand due to its lubricating oil content of 23.3 percent, and its location within a few miles of several large refineries. Proration of the South Burbank field is inevitable and will be handled by the Department of the Interior directly, the field being in an Indian reservation.

Also in Osage County, the old Naval Reserve area, in T24N-R7E is being gradually extended into an important flush producing area now flowing about 12,000 bbl. per day, and having 12 active drilling operations.

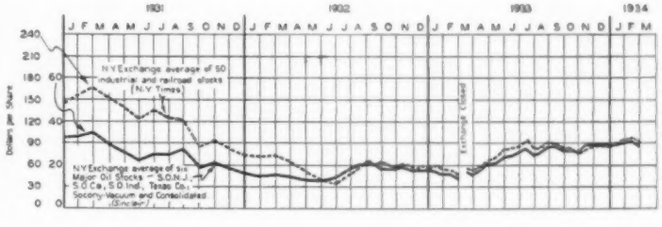
The most important discovery in Oklahoma, since the opening of the Oklahoma City pool, was made in March, 1934, by the Denver Oil and Producing Company in section 34-T10N-R10W in Western Oklahoma in an entirely new area of the state. The company's No. 1 Adah Noe cored 70 ft. of saturated oil sand in the lower Pennsylvanian section, possibly correlatable with the Burbank-Bartlesville sand, from 9,917 ft. to 9,987 ft. at which depth the well will be tested. Enough natural gas was encountered in the well to threaten a blowout and some very light crude oil was produced through the rotary mud. No. 1 Adah Noe appears as a certain producer, though its potential production and relative importance will be determined after the testing. After coring the saturated sand the operators set the longest string of 6⅝-inch O.D. 26-pound casing to a total depth of 9,930 ft. in an amazing time of somewhat over 19 hours, and it was cemented with 3,000 sacks of cement in 3 hours. Other casing in the well includes 230 ft. of surface pipe and 6,250 ft. of 9-inch casing. The Denver Oil and Producing Company's well is in the middle of a 27,000-acre block, which in combination with the very great depth of the producing horizon eliminates it as an immediate danger spot. The cost of drilling of the first well, started in January of 1933, was around $200,000, and subsequent tests will cost at least $150,000. Geologically the well is located on the north rim of the Anadarko synclinal basin, and the location was made on a large surface structure, subsequently checked by seismographs, though the accumulation of oil may be due to lensing out of lower Pennsylvanian formations, including sands, to the north. The nearest production is in the Cement oil field, on the south side of the Anadarko basin and 23 miles due south from the new discovery. The great importance of the Denver Oil and Producing Company's well is in opening for active exploration of vast area in Western Oklahoma, formerly not considered very favorably.

In Central Oklahoma seismograph geophysical prospecting work resulted in discovery of four new small oil fields. The Amerada Petroleum Corporation et al. No. 1 Fonts, near Langston in Logan County, in section 14-T17N-R1W, found the 1-st Simpson sand, Ordovician, at from 5,097 to 5,134 ft. producing 350 bbl. per day naturally of 47.5 gravity oil, and is now being deepened to the 2-nd Simpson sand, which, however, will be probably encountered too low for production. The Sinclair-Prairie Oil Company et al. No. 1 Boland in section 25-T12N-R3E, near Meeker

U. S. drilling; comparison of oil wells, dry holes, and gas wells.



Six major oil stocks in relation to 50 industrial stocks on the New York Stock Exchange.


1931
1932
1933
1934
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M
Dollars per Share
240
210
180
150
120
90
60
30
0
60
40
20
N.Y. Exchange average of 50 industrial and railroad stocks (N.Y. Times)
N.Y. Exchange average of six Major Oil Stocks - S.O.N.J., S.O.Ca., S.O. Ind., Texas Co., Socony-Vacuum and Consolidated (Sinclair)
Exchange Closed

in Lincoln County, on unitized block encountered Simpson sand at 5,455-5,461 ft. and is producing 350 bbl. per day of 34 gravity oil. The Amerada Petroleum Corporation No. 1 Martinek in section 35-T13N-R5E, near Wilzetta in Lincoln County, found salt water in the Simpson sand at 4,518 ft., but after plugging back to the Hunton limestone at 4,241 ft. the well flowed 700 bbl. of oil and 350 bbl. of water initially. The Barnsdall Oil Company et al. No. 1 Seyller in section 12-T15N-R4W, near Navina in Logan County, also on a unitized block, cored saturated oil sand in the 1-st Simpson section at 6,380 to 6,437 ft. and was expected to make a small well upon setting casing and testing.

In the Newalla pool, discovered in February, 1934, the Springrose Drilling and Watchorn Oil and Gas Companies No. 1. R. J. Edwards in section 19-T11N-R1E after acid treatment is estimated good for 200 bbl. of crude oil and 10 bbl. of salt water per day from the Hunton limestone at 6,025–6,079 ft. The importance of the Newalla discovery is principally in opening for exploration an area formerly not considered as favorable.

In Garvin County, near Paoli, Anderson and Kerr No. 1 Rodke in section 21-T4N-R1W cored heavy black oil saturated sand in upper Simpson section at 4,892–4,955 ft. and is due to test, though it is not considered too favorably because the oil in cores did not appear to be live crude, though structurally the well correlates fairly satisfactorily.

In Pontotoc County a new shallow oil producing area of considerable extent appeared likely with the completion by the Manahan Drilling Company of its No. 1 Reynolds Wagoner in section 18-T2N-R7E in the Booch sand, Pennsylvania, at 1,764 ft. for 90 bbl. per day settled. A fast leasing and drilling campaign followed the discovery well, which at first appeared as a much better producer, and the real potentiality of the district will be determined within a few weeks.

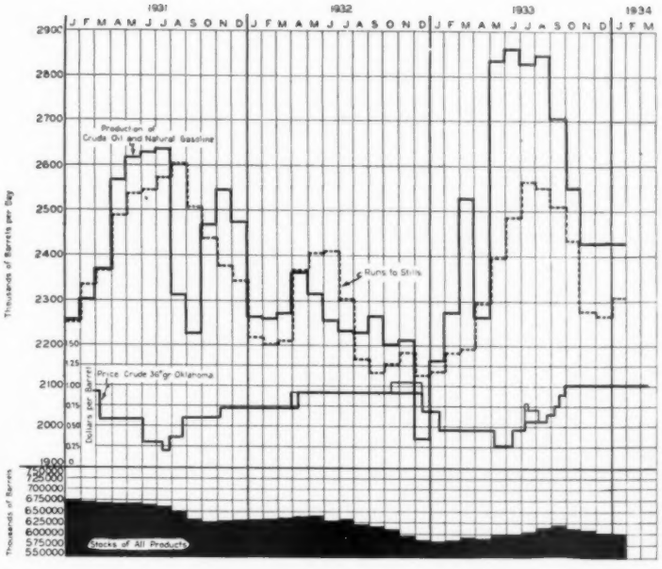
In the older fields of Oklahoma additional large wells were being completed, and new projects started. The Lucien field was recently extended southwest by the Carter Oil Company's No. 1 Webber in section 20-T20N-R2W which was completed for 4,300 bbl. initially from the 2-nd Simpson sand at 5,195–5,205 ft. and by 2 smaller wells of Amerada-Stanolind Oil Companies and the Shell Petroleum Corporation in sections 20 and 21, resulting in drilling of 16 new wells; the 19 oil wells completed in Lucien field to date have a potential production of 56,500 bbl. per day, and an allowable of 5,650 bbl. per day. The West Chandler pool discovered in 1933 by seismograph prospecting was extended half-a-mile to the east in February 1934, by completion of three large wells, and the old Chandler pool was being more actively drilled.

In Oklahoma City pool the Carter Oil Company (S.O.N.J.) purchased the holdings of the Slick-Urshell Company including 112 wells on 720 acres for a reported consideration of around $5,000,000. The purchased properties have a current allowable production of 20,000 bbl. per day now being bought by the Stanolind Crude Oil Purchasing Company, the transfer of properties thus cutting this important source of supply from the Standard Oil Company of Indiana, and accentuating the important factor that the major oil companies are building up their crude oil reserves.

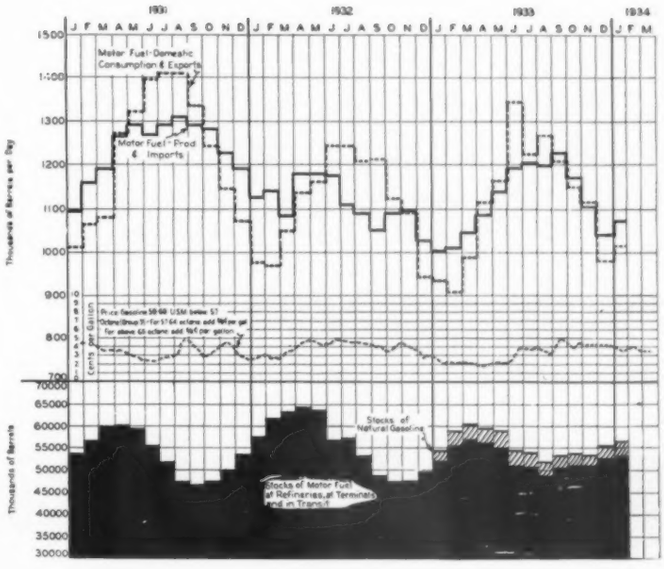
Anderson County—East Texas

THE TIDE WATER OIL COMPANY and The Texas Seaboard Oil Company No. 1 Fee, in Samuel Snider survey, near Cayuga, was completed for 600 bbl. initially from the Woodbine sand encountered at 4,061 ft. and drilled to 4,088 ft. The discovery does not appear to be a forerunner of a large field because of the heavy character of the crude oil, but 28 gravity as compared with typical Woodbine crudes of over 40 gravity, and because of the small initial production. The Cayuga discovery well was located on a structure mapped by the seismograph geophysical survey. A second project was started by the operators 2,800 ft. north from the discovery well. The acreage around

Map of Oklahoma showing recent discoveries and active fields.



U. S. production, runs to stills and price of crude oil in relation to stocks of all petroleum products.



U. S. consumption and exports, production, imports and prices of motor fuel in relation to motor fuel stocks.

the well is controlled by the Tide Water and Texas Seaboard Oil Companies.

East Texas

TOTAL SUCCESSFUL completions in the East Texas field reached 12,700 by the end of March, an average of one well to 8.44 acres, while completions and new projects continued to average about 65 each per week. The March allowable production of the East Texas field is 430,588 bbl. per day, but the actual, reported and unreported, production continues to exceed the allowable by about 70,000 bbl. per day. Purchases of producing properties in the East Texas field by major companies from independents continued, with Stanolind Oil and Gas Company steadily accumulating additional production, its recent acquisitions including 145 acres with 19 wells from Heyser-Heard and Woodley Petroleum Company interests for around $550,000. The East Texas Oil and Refining Company bought 250 acres with 34 wells from the Falcon Oil Company for a reported consideration of $1,250,000.

Michigan

MCCLANAHAN OIL COMPANY No. 1 Heintz in section 24-T22N-R1E in Ogeman field, and 60 miles north from the Mt. Pleasant field, proved the extension of Dundee limestone production into northern section of the peninsula, encountering that formation at 2,814 ft. and producing 10 bbl. per day before acid treatment.

The March potential production of the state declined 3,673 bbl. per day from the preceding month to 115,673 bbl. per day, the Porter field accounting for most of the decline. The allowable of the state is 29,300 bbl. or 25.35 percent of the potential. With the Porter field passing its peak activity the potential production of Michigan is due for a precipitate decline, probably to below 50,000 bbl. per day by the end of 1934.

Burrton—West Kansas

SINCLAIR-PRAIRIE Oil Company (Consolidated) No. 1 Bass in section 36-T23S-R4W was deepened from the Mississippi Chat where it produced 23,000,000 cu. ft. of gas and 25 bbl. of oil per day from 3,230–3,320 ft. to the Hunton limestone and at only 1 ft. penetration at 3,586 ft. produced 600 bbl. of crude oil per day thus greatly increasing the importance of the Burrton pool. Considerable drilling to this deeper-pay horizon is anticipated this summer, and very likely even deeper production will be proven in the Viola limestone and the Simpson sands.

NRA Code Appeal Delayed

THE TWO Texas federal court decisions against the Oil Code as applied to production, refining and marketing within the State of Texas rendered in February were granted appeals to the Supreme Court of the United States on March 16. The reasons for delays were evident and were clearly stated by Quinn Shaughnessy, chief of the legal section of the Petroleum Administrative Board, who said: "Because this test involves, in reality, not only the petroleum code, but also some 300 and more other codes under the NRA, we are moving slowly. The case must be studied not only by our department but by heads of the other codes involved, as well as the Department of Justice."

NRA Production Control

THE ENFORCEMENT of federal state allowables continued ineffective, with all principal producing oil states having an output for February and the cumulative production far in excess of the federal quotas, the state of Kansas alone remaining within its allowable. The March U. S. A. allowable, increased by 99,000 bbl. per day over February quota, and the April national crude production allowable was further increased by 83,400 bbl. per day over March, making total allowable production, effective April 1st, 2,366,200 bbl. daily of which Texas got the largest increase.

Pipe Line Bill

SENATOR BORAH (R., Idaho) and Representative Strong (D., Texas) introduced on March 10 in the Senate and in the House bills to divorce oil pipelines from companies engaged in any other branch of the industry, and to prohibit ownership of pipeline securities by any person owning securities in any other branch of the oil business. In 1933 a similar bill sponsored by Representative Marland of Oklahoma failed of passage. The bill, if passed, will work a severe hardship on the whole oil industry without any possible material benefit to the crude oil producer, in whose favor the bill is supposedly sponsored.

Texas Adds to Enforcement Legislation

GOVERNOR Miriam A. Ferguson on March 9 signed in Austin, Texas three oil bills passed by the recent special session of the legislature written to curtail the traffic in illegal "hot" crude oil. The bills became effective immediately.

The most important bill placed all refineries under the regulations of the Texas Railroad Commission, authorizing it to examine in detail the records of refineries to determine the

Crude Oil Prices

(Dollars per barrel)

		Effective Sept. 29, 1933	In Terms of Gold at 41% Discount
Oklahoma, North Texas and Kansas	28 deg.	U. S. $0.84	Gold $0.49½
	36 deg.	1.00	0.59
	40 deg.	1.08	0.63¾
East Texas—regular	flat	1.00	0.59
East Texas—illegal	flat	(estimated) 0.65	0.38½
West Texas	flat	70–75	41¼–44¼
Gulf Coast	25 deg.	0.94	0.55½
	30 deg.	1.04	0.61¼
	34 deg.	1.08–1.12	63¾–66
	40 deg. top	1.12–1.14	66–67¼
Conroe	36 deg.	1.11	0.65½
	40 deg. top	1.19	0.70
Gray County, Texas	40 deg. top	0.91	0.53¾
Smackover, Ark.	flat	0.70	0.41¼
Rocky Mountains:			
Salt Creek	36 deg.	1.00	0.59
Elk Basin	flat	1.18	0.69½
Pennsylvania:			
Bradford Distr.	flat	2.45	1.45
Eureka Lines	flat	2.67	1.22
Mt. Pleasant, Michigan	flat	1.02	0.60
		Effective Sept. 6, 1933	
California:			
Santa Fe	34 deg.	1.19	0.70
Kettleman Hills	39 deg.	1.11	0.65½

source of all petroleum used so that the sources of the illegally produced crude oil may be definitely traced. This bill was passed over many objections of East Texas refiners who claimed their business will be ruined by the strict control.

The second bill increased the tax on crude oil from one-tenth to one-eighth of a cent per barrel totalling about $1,250 per day, to give the Railroad Commission sufficient funds to defray expenses of enforcing conservation laws.

The third bill made violations of proration laws a felony punishable by imprisonment and applying to officers of concerns who knowingly permit violations.

The Texas Railroad Commission already had full powers to inquire into producing properties of operators, and was unable to prevent illegal production in the East Texas field which currently averages 60,000 bbl. per day, and therefore it is somewhat doubtful whether a few more laws will improve the situation. What is needed in Texas is a strict enforcement by the Commission, and the revamping of its policies, rather than additional legislation. It is to be remembered that the Railroad Commission was sustained in courts in its enforcement powers, but was depending upon federal authorities to do much of the work.

California Cartel Agreement

THE CALIFORNIA cartel agreement between seven major companies and 18 independents to divide the gasoline market in proportions to be agreed upon has been held up pending a petition to the federal government to abrogate or relax the decree of the federal court for the Northern District in California, rendered in 1930, and restraining twelve California oil companies from alleged monopolistic practices. The federal government in Washington on March 8 agreed to modify the 1930 decree, retaining all of the anti-trust features of the court order, and it advised accordingly H. H. McPike, United States Attorney in California; a hearing is to be held on the petition for modification filed by the oil companies. The reservations thus forced upon the Cartel agreement may reduce, or prevent, its effectiveness.

Labor

THE FIRST possibly serious labor trouble the producing branch of the oil industry ever faced is apparently forthcoming in Seminole oil fields of Central Oklahoma. The Boilermakers, Machinists and Oil Field Workers' unions have voted for a 48-hour strike-holiday if the oil companies will not open negotiations. Lon Code, chairman of the federated committee of the three Unions informed oil companies of the deadline and advised General Johnson, NRA administrator, to send a federal arbitrator. The oil field unions demand their official recognition by the companies; collective bargaining, as defined by the petroleum code; a wage increase of about 40 percent (to $12.95 a day for drillers and to $5.95 a day for common labor); cessation of "intimidation"; regulation of the vocational schools; specification of those who can be classified as supervisors; classification of stripper wells and the definition of what constitutes an emergency.

Price Trend Indefinite

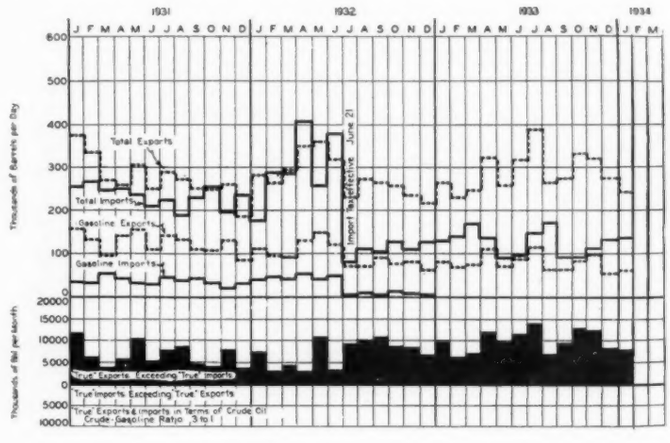
DURING THE last half of February and first half of March the crude oil prices throughout the United States were maintained, but the motor fuel prices declined appreciably, with natural gasolines losing one cent a gallon. The retail gasoline markets were generally weaker, and locally were demoralized by "price-wars." California again witnessed melting service station prices in Los Angeles as a new "price-war" flared up, reducing motor fuel to 9.9–11½; 13 and 15 cents per gallon for three respective grades, including all taxes. In Dallas and in northeast Texas third grade motor fuel also slipped down to 10–11 cents per gallon, while in Oklahoma third grade was retailing at 13 cents, but in both states the major companies held their third grade quotations at 15–16 cents per gallon. Other localities where regular grade sold at below 16 cents at service stations, and including all taxes, are St. Louis; Wichita, Kansas; Ft. Smith, Arkansas; Houston, Texas; Providence, R. I.; and Washington, D. C.

Service station prices per gallon for motor fuel, regular grade and including all taxes, in

▲

Total U. S. imports and exports and gasoline imports and exports in relation to true exports exceeding true imports.

▼


1931
1932
1933
1934
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M
Thousands of Barrels per Day
Total Exports
Total Imports
Gasoline Exports
Gasoline Imports
Import Tax Effective June 21
True Exports Exceeding True Imports
True Imports Exceeding True Exports
True Exports & Imports in Terms of Crude Oil
Crude-Gasoline Ratio 3 to 1

Effect of Federal Production Orders on Principal Oil Producing States

(in Barrels)

	Sept. 1933 to Feb. 1934	March	Daily Average Production for Week Ending	
	Cumulative Position	Federal Quota	March 3 (3 days)	March 10
Texas	6,932,000	947,900	1,003,000	1,018,000
Oklahoma	1,651,000	456,400	404,500	477,500
California	2,691,000	453,900	424,000	470,000
Kansas	68,000	112,300	113,000	113,500
United States	12,777,000	2,282,800	2,253,000	2,385,000

representative districts in the middle of March were: 17.0 cents in New York City (16.3 cents in Newark, N. J.) 18.3 cents in Chicago; 17.5 cents in Ohio; 12.0/19.5 cents in Los Angeles/San Francisco; 18.0 cents in Oklahoma; and 27.0 cents in Montreal, Canada, with 2-cent differential for the premium grade.

Refinery gasoline quotations in Mid-Continent district declined about half a cent per gallon from the prices of middle February, and on March 15 refinery gasoline was quoted at 3⅜–3½ cents per gallon for 58–60 U.S.M. grade, 59.9 and below octane rating in Group 3, Oklahoma market; 60 to 64.9 octane rating, U.S.M., brought 4¼–4½ cents a gallon; and 65 and above octane rating, U.S.M., commanded 4½–4¾ cents per gallon. On the East Coast, at Bayonne, the U.S.M. grade, 60 to 64.9 octane rating, was quoted unchanged at 5¾–6 cents per gallon (3.39 cents gold*). Gulf Coast prices for export on March 15 were also unchanged at 4¾–4⅞ cents per gallon (2.81 cents gold*) for 58–60 U.S.M. grade.

Natural gasoline prices declined 36.2 percent from the preceding month and on March 15 natural gasoline was quoted at 1⅝–1⅞ cents per gallon (1.00 cents gold*) for grade 66–70 in Oklahoma and North Texas and at 2⅛–2¼ cents a gallon (1.17 cents gold*) in North Louisiana.

Kerosene prices remained unchanged from the preceding month and on March 15 grade 41–43 w.w. was quoted at 3¼–3½ cents a gallon in Group 3, Oklahoma market; and at 5¾–6 cents a gallon (3.4 cents gold*) on the East Coast at Bayonne. Gulf Coast prices for export remained steady at 4⅛–4¼ cents per gallon (2.48 cents gold*) for 41–43 p.w. grade.

Prospects for the future course of prices for petroleum products remained unchanged from the preceding month and depend entirely upon the effectiveness of the federal and state control of crude oil production and runs to stills, both of which continue to be excessive. Some time will be required to control production and runs to stills, if they are to be controlled at all, and to organize the handling of distress surplus gasoline by the National Petroleum Agency, and consequently the refinery gasoline and the retail motor fuel prices may be anticipated to be from unchanged to weaker until seasonal demand picks up in May and June.

Exports and Imports

DURING JANUARY, 1934, total imports of all petroleum products into the United States increased slightly to 4,044,000 bbl., 130,300 bbl. per day, as compared with 3,962,000 bbl., 127,800 bbl. per day, imported during the preceding month. Under the federal quota the imports are limited to 108,400 bbl. per day; thus during January, 1934, the quota was exceeded by 21,900 bbl. per day; and over the September, 1933–January, 1934, period inclusive the imports averaged 111,000 bbl. per day, or 2,600 bbl. per day above the federal allowance.

Exports of all petroleum products, including motor fuel, in January, 1934, declined to 7,650,000 bbl., as compared with 8,592,000 bbl. exported in December, 1933; and were 7.3 percent below the total exports in January of 1933. Motor fuel exported during January, 1934, amounted to 1,940,000 bbl., as compared with 1,649,000 bbl. exported in December of 1933, an increase of 17.65 percent; and 22.85 percent under motor fuel exports in January, of 1933. Exports of crude oil from the United States again declined to 2,288,000 bbl. during January, 1934, as compared with 2,709,000 bbl. exported in the preceding month, and constituted 29.9 percent of the total exports of all petroleum products.

* U. S. dollar at 41 percent discount.

Refinery Runs Excessive

CRUDE OIL and natural gasoline production during February, 1934 averaged about 2,400,000 bbl. per day, 24,000 bbl. per day under the production for the preceding month; but still 130,000 bbl. per day in excess of crude oil and natural gasoline production during February 1933. Crude oil and natural gasoline production continued at an excessive rate till the middle of March, exceeding the federal allowance by about 100,000 bbl. per day. Natural gasoline production in the United States approximates currently 95,000 bbl. per day and is not included in the federal allowables.

Total stocks of all oils decreased by 4,357,000 bbl. during January, 1934, to a total of 599,833,000 bbl. indicating a daily gross decline in stocks of 155,000 bbl.

The crude oil runs to stills during the first half of March, 1934, continued at an excessive rate of around 2,320,000 bbl. per day.

BASIL B. ZAVOICO

Tulsa Exposition

(Continued from page 129)

products and throwing out much of the oil as waste. In contrast with this will be a model refinery of modern times which uses practically every particle of the crude, even in some instances the smoke that goes up through the stacks.

An entire building is given over to the marketing end of the industry and in it will be traced the development of marketing petroleum from its beginning early in the century as a side-line to the grocery store. Later the drug store and automobile accessory firm placed gasoline pumps at the curb but gasoline was still a sideline business. Next, following the World War, the filling station came into its own with the drive-in type where gasoline was sold exclusively. The modern trend, however, has been to add sidelines such as tires, batteries, and even drinks and cigarettes. Thus the trend to date has been almost to reverse the first gasoline station which was a sideline to the grocery store. In addition there will be exhibits typifying the modern trend in service stations with displays of the station of the future.

A Scientific and Technical committee under the direction of W. A. Schlueter of the Refinery Supply Company is preparing an elaborate exhibit of the latest in scientific apparatus. One entire building is being devoted to these exhibits which are free and which will be accepted only after careful consideration by the committee.

The last International Petroleum Exposition was held in Tulsa in 1930. Ninety-two percent of the earlier exhibitors replying to a questionnaire state that they have improvements in their products and 41 percent report new devices or equipment for display.

The exposition has a permanent site east of Tulsa on a 20 acre plot of ground with five large exhibit buildings and space for open air exhibits of drilling and pumping equipment. By the middle of February over 80 percent of the available booth space had been sold out.

The Congressional resolution approving the show waived tariff duties on products or equipment brought into the United States for exhibition in the exposition. It is anticipated that a general wave of reconstruction, improvement in the American position in regard to foreign exchange, recognition of Russia and refinery building programs in countries outside the United States will lead to a large representation from the petroleum industry abroad. (The front cover picture on this month's issue of WORLD PETROLEUM is a striking night view of the 1930 petroleum exposition. EDITOR)

Union Soviet Socialist Republics

Official Figures for Soviet Oil Operations

	Crude Production (Bbl.)	Daily Average (Bbl.)	Run to Stills (Bbl.)	Drilling (Feet)
1934				
January	13,356,000	430,840	11,680,900	317,011
February	12,488,900	446,000	10,621,800	321,509
Total 1933	148,901,900	407,950	131,591,300	2,789,523
Quota 1933	170,800,000	467,670	155,000,000	3,315,000
Revised Quota 1934	214,900,000	588,876	193,400,000	7,260,000

Crude conversion ratio: 7 bbl.—one ton.

General Considerations

A REVIEW of the situation within the Soviet petroleum industry indicates that a number of factors have combined to make the next few years critical ones, not only for the development of the oil industry within the U.S.S.R. but also for the successful completion of the entire economic plan. The petroleum industry occupies a position of unique importance in the economy of the U.S.S.R., a position which it owes to the fact that the economic plans call for the industralization of the entire country, a program which depends largely upon an adequate supply of fuel oil for industrial use and other petroleum products that have become accepted as vital necessities in the development of any industrial country. In addition to this fact, Russia depends to a great extent on the export of petroleum and products to obtain abroad the credits which are necessary to purchase important capital equipment and which are even more necessary in enabling the Soviet Union to continue its policy in regard to credits obtained abroad. Finally, both Russian economic plans provide for the mechanization of agriculture, which in turn depends on the available supply of tractor fuel and the installation of an adequate system of motor transport.

From the beginning of the First Five Year Plan the Soviet authorities recognized fully the importance of the petroleum industry in all three of these respects. Development of the petroleum industry during the First Five Year Plan was a model on which all other industries in the U.S.S.R. could be fashioned. During the First Five Year Plan remarkable progress was made in the development of the petroleum industry. However, fiscal requirements, the determination of the Soviet authorities to avoid at any cost the slightest default in their foreign obligations, and other factors combined with over-confidence in the ability of their domestic industry to produce adequate capital goods for the production and manufacture of petroleum, led to a premature cutting off of imports of drilling, refining and other types of equipment, before the Soviet industry was in a position to furnish these essential tools to their own petroleum industry. Cutting off imported supplies and a lack of properly trained oil experts to operate such machinery as they had, led to overwhelming difficulties which became apparent in 1933 and may clearly be seen from the results of the year in the petroleum industry.

The inability to continue development at the rate that prevailed during the first Piatiletka was recognized by the authorities and changes were made in the planned production to be achieved during the Second Five Year Plan period. The original figure of 563,500,000 bbl. of crude to be produced in 1937 was reduced to 476,700,000 bbl. when irregularities began to develop in the fields during 1932. This plan anticipated an increase of approximately 20 percent yearly and during the past year it became evident that even this reduced figure was impractical. The most recent plan approved by the XVII Congress of the Communist Party calls for a production of 327,600,000 bbl. by the year 1937, and of equal significance, plans for a far larger part of the production to come from Baku. In the earlier plans entirely new regions were to be developed to relieve the pressure on the Baku area. Present indications are that still further reductions in the final quota will be necessary.

Crude Production January-February by major Soviet Fields:

	January	February
Azneft Baku	10,447,520	9,638,400
Grozneft	1,873,560	1,692,277
All other	1,034,920	1,158,223
Total	13,356,000	12,488,900

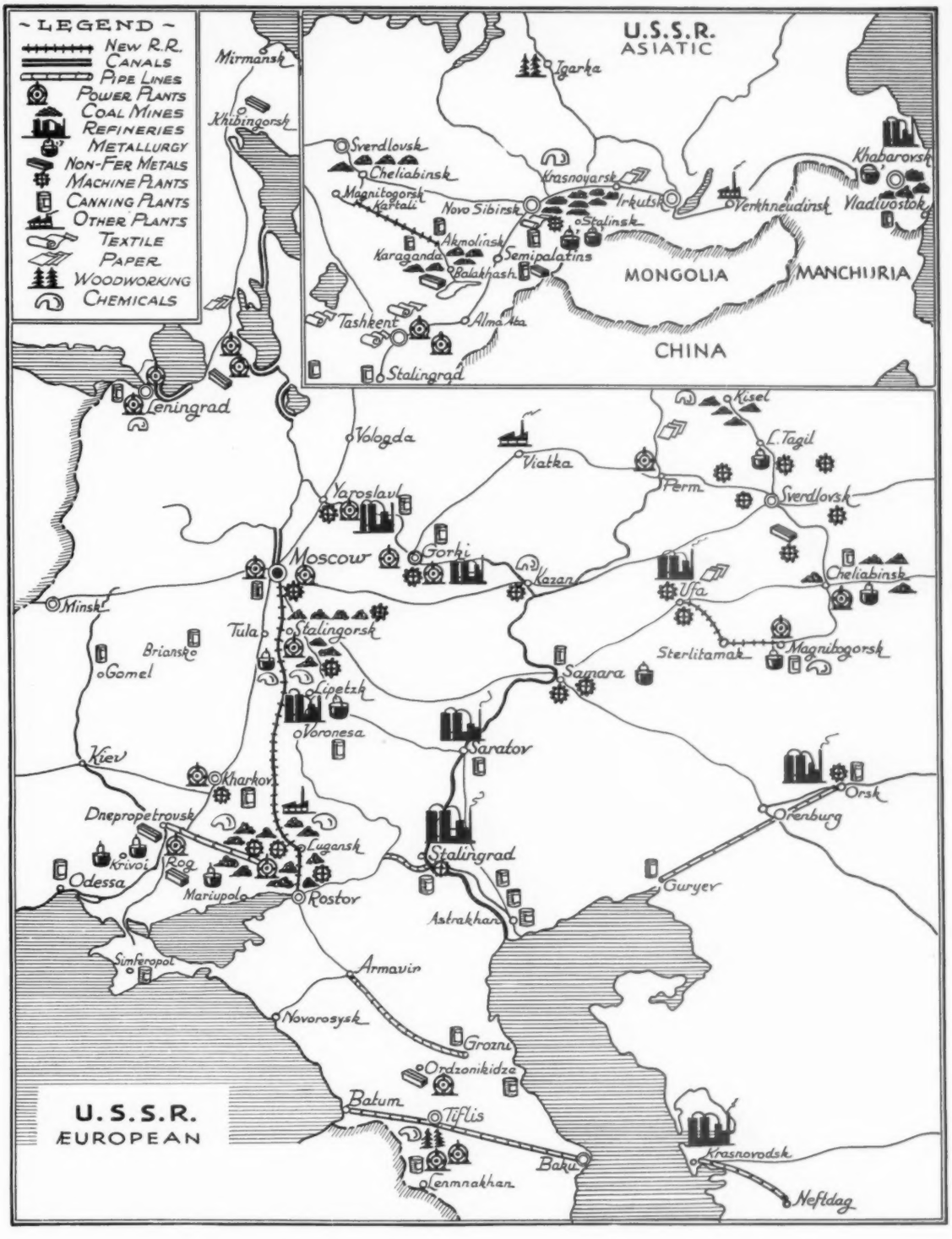
In order to obtain the proper fuel balance for all branches of the Soviet industry, it was necessary to reduce plans covering developments during the coming years in other industries which depend on petroleum products. Further reductions in the possible crude production for 1937 will necessitate still further changes in plans affecting other industries.

Soviet Oil Production and Drilling

Year	Barrels	Feet
1922	36,750,000	229,680
1923	42,280,000	406,230
1924	49,280,000	601,590
1925	58,450,000	752,730
1926	70,560,000	1,258,950
1927	78,050,000	1,194,600
1928	94,850,000	1,468,500
1929	119,280,000	1,537,470
1930	129,290,000	2,127,840
1931	156,240,000	2,331,310
1932	149,660,000	2,436,318
1933	148,901,900	2,789,500

Apparently the oil industry in Russia must continue to depend to a large extent on the production from Baku, and Baku itself depends to a dangerous degree just now on gusher production, which in turn forms a somewhat unreliable foundation from which to build plans that comprise the fuel balance for the entire country. Drilling of new wells, both in established fields and in new regions appears on the surface to have progressed exceptionally well. During the last year, however, it has become increasingly evident that while reports mention more and more feet drilled each month, this drilling is not bringing the results it should, again because of unskilled labor and inadequate equipment. An example of the way in which the feet drilled are wasted may be seen in the case of Grozni: 19 wells drilled to the Maikop producing sand at Grozni in 1930 have not yet been completed—not a single one of these wells has reached commercial production during these four years; in 1932, 14 regions were drilled with a total of 32 wells—not a single well in this group has been completed as yet; 13 new wells were begun in 1926 to test the saturation of the sand under the Benoi district—of these only two reached the producing sand and neither could be used as a test due to breakdowns before commencing production. Of all these wells, not a single one served any useful purpose, but all of them were taken into account in making up the statistics of feet drilled per month.

A slight change in Soviet oil policy may be seen in statistics on drilling, which indicate that more emphasis is being placed on drilling in known areas. Thus, production drilling in proven areas increased from 1,656,737 ft. in 1932 to 1,898,924 ft. in 1933; but exploration drilling in new regions decreased from 425,214 ft. in 1932 to 395,618 ft. in 1933. In the refining branch of the Soviet industry, lack of modern equipment and technical experts show the most obvious results. Runs to stills for all Soviet refineries increased from 113,208,900 bbl. in 1930 to 139,430,200 bbl. in 1931 and to 141,501,500 bbl. in 1932; but decreased 8.4 percent to 131,591,300 bbl. in 1933. Of the 32 cracking units in operation in the U.S.S.R. at present only three are of domestic design and construction. All the others were imported. Production of gasoline decreased 7.9 percent from 24,491,900 bbl. in 1932 to 22,-



Progress of Industrialization in U. S. S. R.

Map showing the location of plants serving the Soviet Union with power, fuel, metal, machines, textiles, paper, and chemicals. The distribution of petroleum refineries in regard to location of other principal industries indicates definite planning, both for convenience in development and for considerations of national defence. The necessity for developing refineries and power plants in Asiatic Russia is indicated by the map in the upper right hand corner.

562,825 bbl. in 1933. Supplies of petroleum products, especially gasoline, intended for domestic consumption have had to be rationed in an effort to maintain the Soviet export position. Industrialization of the country cannot however, continue successfully if the automobiles, factories, tractors and mechanical farm implements are deprived of motor fuel and fuel oil.

Soviet Internal Consumption and Exports of Petroleum Products

(Barrels)

Year	Internal Consumption	Exports
1923	24,192,000	5,067,000
1924	31,990,000	9,114,000
1925	37,814,000	10,311,000
1926	41,342,000	14,273,000
1927	47,390,000	19,096,000
1928	54,425,000	24,962,000
1929	70,742,000	31,794,000
1930	71,232,000	33,621,000
1931	83,195,000	36,568,000
1932	100,520,000	42,084,000
1933	92,820,000	33,600,000

The shortage of petroleum products to satisfy domestic demand of a greatly increased number of plants, tractors, and automobiles, was apparently shared about equally between domestic demand and exports as the above figures indicate that domestic consumption and exports were decreased by approximately the same amount although exports during the preceding year were less than fifty percent of domestic consumption. Figures indicate that from 1932 to 1933 consumption of gasoline, kerosene and lube oils increased while consumption of fuel oil and all other products decreased. Efficient industrialization can hardly be achieved if factories that could operate most efficiently on fuel oil are deprived of this fuel which is used for export.

Soviet Oil Exports by Individual Products for 1933

(Barrels)

Crude Oil	1,617,000
Gasoline	9,674,000
Kerosene	4,655,000
Gasoil	4,466,000
Lube oils	1,694,000
Diesel and Fuel oils	11,494,000
Total	33,600,000

Soviet Oil Exports by Countries of Destination for 1933

(Barrels)

Italy	6,895,000
France	5,180,000
England	2,450,000
Germany	3,514,000
Spain	2,520,000
Japan	434,000
Belgium	1,757,000
Sweden	1,610,000
Egypt	826,000
Turkey	490,000
India	1,330,000
Holland	434,000
Denmark	812,000
China	728,000
Uruguay	490,000
All others	4,130,000
Total	33,600,000

In considering the accompanying table dealing with Soviet exports of petroleum products by countries of destination it should be borne in mind that petroleum exports from Russia destined for Czechoslovakia, Austria and Switzerland are shipped through the free port of Hamburg and hence are included with the figure for export to Germany. Likewise some of the exports destined for south and west Germany are shipped to Belgium for transshipment across the Rhine.

Italy now ranks as U.S.S.R.'s best customer through the semi-official A.G.I.P. company and is likely to continue an important market for Soviet oil while the refinery building program is underway. For the next few years that market seems safe for the Russians. France ranks second as a purchaser of Soviet oil, but this position may be disturbed when during 1934 Iraq oil begins to reach the Mediterranean. A commercial treaty signed between France and Russia early this year accords oil imports from Russia an important place because the funds for oil purchases are to furnish security for twenty-two months credit for the Russians which will be used to purchase French goods.

England has dropped from first place as purchaser of Soviet oil to fifth place partly due to the embargo that was in effect during 1933, partly to non-renewal of trade agreements but principally to expiration and non-renewal of contracts with the Combine in Great Britain. Other countries which have decreased the amount of petroleum imported from U.S.S.R. are; Belgium, Sweden, Egypt, Holland, Turkey and especially Japan.

On the whole therefore, Russia occupies a much less strategic position in the world export market than it did two years ago when the question of an international agreement arose. In addition to other factors mentioned, the imminence of supplies from Iraq is a question that greatly interests Soyusnefteexport and which it is said the Soviet authorities might be willing to make the subject of an international oil conference with the major oil companies.

The Month

MR. RUDZUTAK speaking before the Central Committee of the Communist Party recently stated that the oil industry had achieved no particular success of which to boast, principally because of lack of exploratory drilling. Again the case of Grozni was brought up and the fact that decreasing production at that trust has not yet been arrested despite the drastic changes made in the organization late last year. The time when Grozni will have started increasing production still seems a long way off.

During 1934 it is planned to produce 43,400,000 bbl. of crude at Grozni despite the very poor showing so far. Runs to stills at Grozni during 1934 are expected to amount to 64,000,000 bbl. of which 31,250,000 bbl. will come from Grozni, 30,800,000 bbl. from Baku and 1,950,000 from Maikop. Baku crude for Grozni refineries will be transported to Makhatch Kala on the Caspian and piped to Grozni from there, putting an additional strain on transport facilities.

It is planned to spend a total of 770,000,000 gold Rbl. during 1934 for capital equipment. Of this amount 146,000,000 Rbl. will be spent on refineries, completing the cracking installation of eight units at Saratoff, constructing a refinery and cracking units at Khabarovsk, installing four new cracking units at Grozni, building a gasoline absorption and carbon black plant at Maikop, and improving plant at Baku. Further investments will be made in extending oil transportation facilities, including the railroad at Ufa Ishimbayevo and the following pipelines:

Caspian Sea—Orsk
Makhatch Kala—Voronesh
Neftdag—Krasnovodsk
Extension of the Grozni—Ukraine line
Reconstruction of Baku-Batum and Grozni—Armavir lines

A total of 93 cracking units and 46 pipe stills are to be started in construction in 1934 to be completed during 1935. These will include new refineries at Voronesh, Gorki (former Nijni Novgorod), Stalingrad and Ufa. These new refineries will require about 60,000 tons of equipment, over 2,000 various pumps and compressors, 250,000 meters of pipe, 170,000 meters of water mains, 125,000 meters of sewer pipes, 23 steam boilers for an equivalent of 144,000 KW. and over 1,000 measuring instruments. The number of tank cars for transportation of oil and products to and from these points will have to be doubled and all rail junctions will have to be reinforced.

The Podolski Works will be enlarged for a yearly output of 50,000 tons of oil equipment and a special plant will be erected in 1934 for the building of pumps with a capacity of 2,000 units per annum. The Voronesh refinery is designed for an annual capacity of 21,000,000 bbl. of crude.

U.S.S.R. in Asia

GROWING INTEREST in the petroleum supplies for eastern Russia is becoming apparent. Urals, Eastern Siberia, Soviet Far East, Central Asia and Kazakstan are rapidly completing their industrialization and present demands for an adequate fuel supply. This has been supplied as far as possible from Baku in the past. In order to relieve this strain on transportation and release Baku products for use elsewhere in Russia, the proposal to establish an oil center in Emba and other locations in the east is receiving serious attention. Amendments to the Second Five Year Plan have been proposed by a group headed by the distinguished Acad. Gubkin which make provision for the establishment of oil centers at Ural-Emba, in the Bashkira region and elsewhere in the east.

The Ural-Emba region comprising some 250,000 square miles is situated on the northern shore of the Caspian sea and it was determined in pre-war days that oil resources were present. The significant feature about Emba is that there is undoubtedly a vast quantity of oil there on which some work has already been done; but in the present stage of development these resources are useless because of the difficulties in getting out supplies. There are no roads, no water, very few inhabitants, no extra housing facilities and the region is accessible for a maximum of three months when the rivers are frozen or when they are dried out.

Careful estimates of the potential production of this region indicate that it is second only to Baku in quantity of resources. Oil is

located in connection with salt domes of which there are over 300. Twenty-two fields have been surveyed during the past 25 years and 191 wells have been drilled. Only three fields, however, are being actively exploited at present and the output is less than one percent of the total Soviet production.

A review of the situation in Sakhalin is also of increasing interest because of the industrialization of Russia's Far East and because of the international situation in the Far East.

Following the evacuation of Japanese troops from Sakhalin in 1925 all the geological data was collected and systematized. It has proved entirely inadequate, however, as the basis for accurate estimates of the potentialities of the island. This material has since been supplemented by the geological and topographical data that has been collected by annual exploratory expeditions that have examined structures in Sakhalin. From this data it appears that the East Coast is the most promising area. Locations in the interior have also been examined and plans will be based on this data governing the operations for the next few years. Eleven fields have already been established along the east coast. At the time the process of developing this island was undertaken in 1928 the Japanese had established the Okha field and paved the way for technical and supply bases. Now some 20,000 inhabitants occupy locations that may be developed as important industral centers and from which the colossal work of exploiting the considerable oil reserves of Sakhalin can go forward.

Of the 41,000,000 Rbls. controlled by the trust, 11,000,000 will be spent on drilling, 5,000,000 on drilling equipment, 7,000,000 on storage and pipeline connections, 2,000,000 on electrification, 3,000,000 on transport and 7,000,000 on housing. Finally, 1,200,000 will be spent on geological exploration work.

Three factors contribute to make Sakhalin of outstanding importance to the Soviet Union, an importance that is out of proportion to its ability to produce crude. These are, the chance to replace concessionary capital by a socialist undertaking; the huge export market for oil in the Far East especially in China and Japan; and, the necessity of supplying the domestic market in the Far East, that is, the Eastern Siberia region with its growing industries. Japan, with limited home production, represents an excellent market for over 8,400,000 bbl. of oil products per year, of which only 1,400,000 bbl. can be supplied from domestic production. China imports well over 8,000,000 bbl. per year. There is also a large market in Australia. The maritime province in Eastern Russia requires more than 1,400,000 bbl. annually a figure which may be expected to increase to 2,170,000 bbl. in 1934, 2,800,000 bbl. in 1935, 3,500,000 bbl. in 1936 and 4,725,000 bbl. in 1937. Unquestionably the domestic and export markets exist and the oil is available in Sakhalin.

For the development of this region it is planned to increase drillings in the known oil bearing areas, intensify exploration, remove obstacles to drilling, establish intra-island communication and arrange for barge and tanker transportation on the Amur river.

J. WEGRIN

▼

SHIPPING

THE FIRST repercussions are now being felt of the Anglo-Saxon and other tanker orders. It is a well-known fact that there is nothing like a common peril for forcing people whose ideas may normally be at variance and whose policies may not necessarily be the same to get together; consequently we are finding very vigorous action being taken by the whole of the tramp tanker people with the result that a remarkably ingenious scheme of pooling has been launched. Late in February the International Tanker Owners Association was registered as a company limited by guarantee, without share capital, with an unlimited number of members, each liable for £1 in the event of winding up. The objects are to further the interests of owners and charterers of tank and other vessels engaged in or adapted for carriage in bulk of liquids, to promote and manage schemes for the provision of compensation to any owners or charterers of any such tank or other vessels who may by arrangement with the association lay up the same, and to adopt an agreement with certain companies owning tank vessels and associated with oil companies.

This in brief sets out the object of one of the most important movements in tankship owning and operation which has taken place since tramp tankers first began to bulk largely in the fleets of the world. The formation of an international tanker pool is the purpose of the association.

The proposal for a tanker pool which clearly was inspired by the tremendous effect upon charter tankers, of the new Anglo-Saxon and other building programmes, is said to have been advanced with an idea of inducing owners to refrain from accepting uneconomical rates and by the establishment of a common pool for the benefit of vessels laid up, to secure an automatic rise in rates by which all members will benefit. Approximately 292,700 tons of new tanker tonnage, almost entirely for liner companies, has been put in hand since September of last year and this includes the big coastwise steam driven vessels for Socony-Vacuum, to which attention has been called in these columns already.

Complaints are now being made of the low freight rates, but these are not likely to rise while companies like the Anglo-Saxon can definitely make money with their new tonnage —specially and carefully designed—at rates at which it would not pay the tramp tanker to run. It would appear, therefore, that before any more tramp tanker tonnage is contemplated a severe overhauling of existing designs is necessary. These should be carefully designed to give a maximum predetermined loaded voyage speed at least a knot higher than the new Anglo-Saxon ships and able to develop this speed on a minimum of fuel consumption —an arrangement which cannot be arrived at without taking account of the possibility of exhaust gas steam.

A recent week's chartering showed seven ships, all motor driven, fixed at moderately good rates, and 10 for dirty cargoes, all motorships but one. So that at least the present situation has proved the fact that motor tankers can accept cargoes where the ordinary steamer cannot. It is proving also that a low tons per 24 hours is not everything in ship operation unless combined with the very best hull form, propellers and the most efficient method of cargo handling. Most of the tramp tankers have been designed with every care, but belong to an era eight or ten years old, since which time there have been many improvements.

There are equally important, though not such difficult, problems in the coastwise tanker field in which some interesting contracts have recently been placed.

This field is one in which steam continues to achieve some success, and particularly in coal-fired ships with superheat. Of ships recently completed, the BRANNAREN is one of the most interesting, since she was built originally as a Swedish naval auxiliary, and later chartered to private owners. This ship was chartered some little while ago to Swedish oil companies for two or three voyages. Following this, the Navy Department asked the Swedish Government for a general authorisation to charter the vessel for foreign-going voyages as well as for coasting voyages, the oil companies having originally asked permission to charter the ship on the ground that there was no suitable merchant tonnage available. The Stockholm Shipowners' Association has now sent an official communication to the Swedish Board of Trade opposing the grant of a general authorisation to charter the BRANNAREN and suggesting that such permission should only be granted when there is a real lack of suitable privately-owned tonnage, and that a higher freight rate should be fixed.

British Imports

ALLOWING for the shorter month in February, imports of petroleum and products into Great Britain were well maintained. The feature of the month's imports was the arrival of 1,165,000 bbl. of petrol from the Dutch West Indies.

For the year to the end of February there is an increase of 13.1 percent over imports during the same period of 1933.

British Oil Imports by Products
(Barrels)

	February 1934	Two months to Feb. 28, 1934	Two months to Feb. 28, 1933
Lamp Oil	581,885	1,328,628	921,816
Motor Spirit	2,229,029	4,655,943	4,288,044
Lubricating Oil	242,800	512,857	324,814
Gas Oil	376,257	616,257	529,627
Fuel Oil	1,104,886	2,671,572	2,563,040
Other sorts	71,171	119,428	51,414
Total products	4,606,028	9,904,685	8,678,755
Crude	886,629	1,882,457	1,749,819
Total Imports	5,492,657	11,787,142	10,428,574

MEXICO

Government Company

DETAILS of the organization and functions of the semi-official and all-Mexican oil company formed by the federal government, principal objects of which are to assure ample national petroleum supplies in any eventuality by working federal oil reserves and to free Mexico of domination by great foreign petroleum companies, are announced by Ministry of National Economy. Company, which is entitled Petroleros de Mexico, S. A., has the following program:

Capital will be 20,000,000 pesos (some $5,600,000, U.S.), half of which the federal government will supply in the form of lands of established oil values, while the remainder will be subscribed by various Mexican elements, especially farmers, mining and electric power generating companies, land and sea transport enterprises, motor vehicle owners, and small industrialists who use considerable amounts of oil or its by-products. Though supplying 50 percent of the capital, the government will control but 40 percent of its stock, which allows non-official stockholders to have the greatest say in the enterprise's operations. Majority stock holders will receive dividends yearly. The government's authorization must be obtained, however, for awarding contracts to companies or individuals for working oil lands, constructing oil pipelines and refineries or any other work the cost of which is more than one fifth of the enterprise's capital; regulating or restricting domestic oil and by-products markets; increasing or reducing exploitations, and certain commercial code transactions.

The company will make oil explorations and exploitations; construct and operate petroleum and natural gas pipelines, shipping services refineries, plants, distribution and sales stations for petroleum and products, and systems for obtaining and distributing natural gas; make all kinds of operations for producing, acquiring, storing, transporting, refining and distributing oil; encourage and aid Mexican capital to be invested in the oil industry; endeavor by all possible means to create and maintain a genuinely Mexican petroleum industry; protect and assist independent companies, and modify existing concessions granting procedures so as "to assure that Mexico will no longer continue to be a great private oil reserve for large foreign companies."

The company will have a board of seven directors—four representing the majority stock holders and three the government. Ministry announces that the government has received stock subscription applications amounting to more than 50 percent of the company's stipulated capital and that it already has a large and immediate customer for its products, the National Railways of Mexico, this country's greatest rail system, which uses more than 40 percent of all oil products consumed in Mexico.

The ministry contends that the oil company is assured of success from the start as when it begins operations it will have at its disposal 6,000 bbl. daily, 1,500 of which it will produce from wells in federal petroleum lands under its control and 4,500 that will be obtained from independent producers, and the National Railways and various national administration departments constitute an immediate and large market for its products. Ministry estimates that the company will be producing or acquiring 12,000 bbl. daily, 4,380,000 bbl. a year, within two years after it begins functioning.

The company will have at its disposal 10,231,281 hectares of oil lands in federal reserves, donations of the federal government as contribution of its 50 percent of the enterprise's capital. Of these lands, 9,720,342 hectares have petroleum prospects; 508,818 are recognized oil fields and 2,121 are in producing zones. The nation will give the company 20 percent of federal government controlled oil pipelines for transporting its products and the Tampico refinery of Administrative Control of National Petroleum (federal government agency). Refinery's present daily capacity of 1,500 bbl. will be augmented to 3,000 bbl. by expansions and improvements at the plant.

The ministry calculates that the new company will make large profits and be able to pay substantial annual dividends to its Series B stockholders, Mexican companies and individuals who acquire stock to supply the 50 percent balance of the capital, by retailing gasoline in the Mexico City market. Ministry has ascertained that one of the largest producers and distributors in this field obtains a net profit of 4.27 centavos (about 1¼ cents) per liter from gasoline sales in the Mexican capital. According to the Ministry, costs per liter of gasoline sold in Mexico City are 15.73 centavos; 2.53 centavos for production, 1.70 for freight from Tampico, 8.00 for taxes, 1.50 for distribution, and 2.00 for retailers' commissions. As the product is vended for 20 centavos the liter, a 4.27 centavo net profit is possible.

The Ministry estimates that from the company's 6,000 bbl. initial daily oil output and acquisition, 450 bbl. or 71,000 liters of gasoline can be obtained, which when sold on the Mexico City market will yield a daily profit of 3,000 pesos or 1,095,000 pesos annually. The Ministry is inviting all Mexicans in full page newspaper advertisements to purchase the company's stock which is being offered at 100 pesos (some $28, U.S.) the share. Foreigners are forbidden to buy or acquire this stock, the Ministry points out.

Private Developments

MEXICAN EAGLE Oil (Royal Dutch Shell) proposes various development works in the Rodriguez Clara fields, Vera Cruz state, where it is sinking an experimental well and plans to drill several others, including building an oil pipeline from that zone to the Santa Ana station of the Isthmus of Tehuantepec division of the National Railways of Mexico, a highway eight kilometers long from the fields to the station, and an aviation landing field in the field. It will be necessary to employ about 800 men in these works, according to information reaching the Federal Labor Department from its Vera Cruz agent.

Cia. de Petroleo La Mexicana, S.A., in which A. L. Hampton, Samuel Kose and Mexican capitalists are interested, is drilling a wild cat well which is expected to spud in soon in a federal reserve at Concepcion, Minatitlan municipality, Vera Cruz state. The company has a lease on a fluvial zone tract extending 20 meters wide on each side of the Uzpanapan River for ten kilometers, known as Nacionales

No. 1021, about 40 kilometers from Minatitlan The well is not far from production lands of Mexican Eagle Oil Co. (Royal Dutch Shell). Tools, a rotary outfit and a steel derrick have arrived on the Mexicana's property from Tampico.

Mexican Eagle recently established two pesos (about 56 cents) as minimum daily wage for its Rodriguez fields employees. Lowest day's pay for such workers in Vera Cruz is 1.50 pesos (42 cents).

This company has filed an injunction suit in the fourth Mexico City district court against Ministry of National Economy which denies granting a concession to oil lands enterprise acquired at San Marcos, Vera Cruz state. The Ministry holds that the Eagle company did not obtain rights from the land's legal owners. The company asserts it has clear purchase claim to the tract from present proprietors whom it avers got it legally from the original owner who acquired the area on July 22, 1863.

Taxation Difficulties

SEVERAL oil companies operating in northeastern Mexico have filed injunction suits in courts of Monterrey, Nuevo Leon state, to restrain the Ministry of Finance from collecting the recently decreed levy of 20 centavos (about 5¼ cents) per hectare (2.47104 acres) on petroleum lands. Similar action is planned by oil companies in Tamaulipas and Vera Cruz states, it is reported.

Tampico oil circles are much alarmed by reports that the United States proposes to double import duties on crude petroleum. The contention is that such action would deal the Mexican oil industry a heavy blow as it would virtually eliminate one of its best markets.

Officials of the Mexican Eagle Oil Co. (Royal Dutch Shell) deny Mexico City newspaper stories that the federal supreme court decided against the company in the suit of Compania Petrolera Comercial, S. A. over Lot 113, Amatlan, Vera Cruz state. The case is still pending.

Federal Arbitration and Conciliation Board reports satisfactory settlement of labor dispute, based largely upon higher minimum daily wage scales, of employees of fields, offices and shops of the Agua Dulce, Puerto Mexico, Vera Cruz state, division of Mexican Eagle Oil Company. According to the Board, the agreement provides three pesos (some 84 cents, U. S.) as the lowest day's wage for all departments; that employees who received less than that sum up to the time of the agreement shall be paid on a three-peso daily basis, starting from January 1 last; that workers commissioned to help geologists shall be paid six full days' wages whether or not they work, and that the company will afford workers facilities for attending meetings of their unions and provide transportation to these conferences for employees serving in distant parts of the division.

MINISTRY of Communications and Public Works has authorized National Railways of Mexico to establish a uniform charge of 50 pesos (some 14, U. S.) per car for cleaning and testing the valves of tank cars from which asphalt and cane honey are unloaded, and to charge shippers who order tankers 20 pesos for cleaning and testing those to be used for transporting cane honey and 40 pesos for hauling any other product. Charges for cleaning and testing tankers after the unloading of cane honey and asphalt had been left to station masters who sometimes assessed shippers as much as 70 pesos per car.

German Treaty

EFFORTS to arrange a reciprocal trade treaty between Germany and Mexico which will feature such Mexican products as petroleum and German machinery and manufactured goods, will be a mission of Lawyer Leopoldo Ortiz, new minister to Berlin, it is said in Mexico City official circles.

Foreign companies are manifesting further active interest in Vera Cruz state and are giving attention to Yucatan state, it is shown by a report of Ministry of National Economy's petroleum department that it granted ten drilling permits for Vera Cruz and is considering applications for nine such works in that state and one in Yucatan. Drilling sanctions were granted as follows:

Mexican Petroleum: Rincon Nos. 3 and 4, Raya No. 7, Tronco No. 1 and Chyol No. 6, Chapacao hacienda, Panuco municipality; Southern Fuel & Refining: Olas Nos. 1 and 2, Cacalilao zone, Pancuo; Mexican Eagle: El Burro No. 45, El Burro zone, Puerto Mexico; Mexican Empire Pipeline: Olas No. 3, Cacalilao; Mexican Gulf Oil: Chapacao No. 72, Chapacao, Panuco, and Stanford & Co., Poza Rica No. 1, Poza Rica zone, Coatzintla municipality, all in Vera Cruz state.

Permits solicited are: Administrative Control of National Petroleum (federal government agency), Choapas Nos. 7, 8 and 9, in federal petroleum reserves, Minatitlan municipality; Mexican Eagle: Portero No. 24, Portero del Llano municipality, and El Burro No. 51, El Burro fields, Puerto Mexico municipality; Mexican Petroleum: Midway No. 79, Camino No. 4 and Monte No. 3, Chapacao hacienda, Panuco; Southern Fuel and Refining: Olas No. 4, Cacalilao zone, Panuco, and the Yucatan, Campeche and Quintana Roo Development Co., Chunchucmil No. 1, Maxcami municipality, Yucatan state.

1933 Exports

EXPORTS of 22,016,744 bbl. of petroleum from Mexico in 1933 is announced as the lowest figure for export for any year since 1913. The figures which were given out by Ministry of National Economy's petroleum department are attributed to the decreasing imports of countries abroad due to the trade depression and to the import duties established by the United States. It was announced further that 53 wells with a combined initial daily capacity of 47,000 bbl. were brought in during 1933.

Robert Falconer, an American and Edward Collignon, German, claim to have perfected a preparation of coal gas and crude oil for motor vehicles which is 20 percent cheaper than gasoline as a motor fuel. The new fuel was tried out successfully on a one and a half ton truck carrying two and a half tons of pay load over 15,000 miles of all sorts of road. The fuel has also been tried out successfully in buses and trucks on a regular 90 mile run.

DOUGLAS GRAHAME

FINANCE

London: March

ADVANCING investment values in this market, with a parallel demand for high class industrial equities, has been a major factor in the oil share market during recent weeks. The rise in industrials has made steady dividend-paying oils such as Anglo-Persian, Burmah, Lobitos and Shell look relatively cheap on a prospective yield basis, and support for these and similar shares on any pronounced set-back has tended to offset some of the unfavourable influences operating on the oil market as a whole. Adverse factors have included selling of international shares from the Continent owing to the disturbed political situation in Central Europe, and uncertainty regarding the position of the United States oil industry engendered by the problems revealed in the operation of the Code. Recent earnings and dividend statements issued by leading American oil undertakings have also been depressing, although it is realised that they are not a fair reflection of current conditions. The effect of conflicting elements on share prices is evident. Anglo-Persians, Burmahs, Lobitos and Trinidad Leaseholds, in which British market influences predominate,

London Stock Exchange Prices

1934 High	1934 Low	Last Year's Div. % per Ann.	Share	February 5-March 6 First	High	Low	Last	Change
1 3/16	1 1/16	3½	Anglo-Ecuadorian	3/4	1 3/16	3/4	1 3/16	+ 1/16
1¾	1⅝	10	Anglo-Egyptian "B"	1⅝	1¾	1⅝	1¾	+ 1/8
2⅝	2 13/32	7½	Anglo-Persian	2 15/32	2 19/32	2 7/16	2 19/32	+ 1/8
1 15/32	1 5/16	35	Apex Trinidad (5s.)	1 11/32	1 3/8	1 5/16	1 3/8	+ 1/32
1 3/16	9/16	....	Attock	2 1/32	1 3/16	5/8	¾	+ 3/32
9/16	15/32	7½	Brit. Borneo (6s.)	½	17/32	½	17/32	+ 1/32
3/16	3/16	....	Brit. Burmah (8s.)	3/16	3/16	3/16	3/16	.....
9/32	¼	....	Brit. Controlled ($5)	9/32	9/32	¼	¼	− 1/32
1 3/16	1 9/32	....	Brit. Controlled Pfd. ($5)	2 1/32	2 1/32	5/8	5/8	− 1/32
4 21/32	4⅜	20	Burmah	4 15/32	4 21/32	4 7/16	4 21/32	+ 3/16
7/16	3/8	....	Canadian Eagle (No par)	13/32	7/16	3/8	13/32	.....
¼	3/16	....	Kern River (10s.)	¼	¼	7/32	7/32	− 1/32
2½	2 3/16	12½	Lobitos	2 1/32	2 5/32	2 5/16	2 7/16	+ 1/32
4¼	3 15/16	14‖	London & Thames Haven	4⅛	4 5/32	3 15/16	3 15/16	− 3/16
5/8	17/32	....	Mexican Eagle ($4 Mex.)	9/16	19/32	9/16	9/16	.....
1 3/16	1 9/32	2½	Phoenix	2 1/32	1 1/16	5/8	1 1/16	+ 1/32
23⅜	21 9/16	6	Royal Dutch (fl. 100)	23⅜	23⅜	22 15/16	23	− 3/8
2 13/16	2½	7½*	Shell Transport	2 23/32	2 13/16	2⅝	2 23/32	.....
11⅜	7¾	....	Shell Union (No par)	11⅜	11⅜	10	10¾	− 3/8
5/8	9/16	6	Steaua Romana	19/32	19/32	9/16	19/32	.....
3¾	3 7/16	15	Trinidad Leasehold	3⅜	3 11/16	3 9/16	3 21/32	+ 1/32
1 1/32	9/32	....	Untd. Brit. of Trinidad (6s. 8d.)	5/16	1 1/32	5/16	1 1/32	+ 1/32
1 15/16	1 13/16	12½	Venezuelan Oil Concessions	1 13/16	1 15/16	1 25/32	1⅞	+ 1/16

Nominal value of shares £1 unless otherwise stated by bracketed figures.
* Denotes Tax-free dividend.
‖ 10 percent dividend tax free plus 4 percent bonus less tax.

have made a definitely better showing than Royal Dutch, Mexican Eagles and Shell Union, which are more subject to market trends arising overseas. Business has been relatively quiet, and there is not much evidence of a definite price tendency in either direction. The healthy technical position of the market, however, would doubtless put a limit on any relapse in quotations, which seem ready to continue their advance on any really favourable development.

PREFERENCE shares of the leading oil companies, like the ordinary shares, have been affected by changing investment values in British markets. Considerable attention has been devoted to this class of investment recently, in the search for fixed-interest securities offering a reasonable return.

Twelve months' change in prices and approximate yields of some of the leading shares are shown below, nominal values of the shares being £1 except where stated:

Share	March 1, 1933 Price.	March 1, 1933 Yield.	March 1, 1934 Price.	March 1, 1934 Yield.
Anglo-Persian 8% 1st. Pf.	1⅜	5⅞	1⅝	4⅞
" 9% 2nd. Pf.	1 3/16	6⅞	1⅝	5½
Burmah 8% 2nd. Pf.	1 19/32	5	1 13/16	4⅜
Shell 5% (£10) Pf.	11¼	4½	12¾	4⅛
" 7% 2nd. Pf.	1⅜	5⅛	1 15/32	4¾

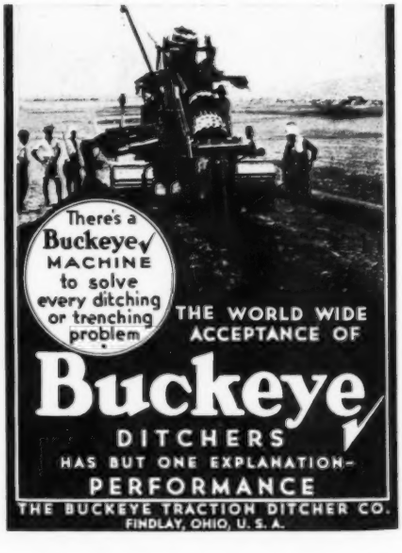
The relatively big advance shown in Anglo-Persian preference shares, with a corresponding reduction in the investment yield during the past twelve months, is due to the fact that in March 1933 considerable doubt existed as to the future of the company's Persian concession. With the removal of this doubt, the shares have regained their attractions for investors, and their advance has been rapid in consequence, although they still offer a higher yield on an investment than the other shares shown in the table. The yields of oil preference shares as a whole are very much on a level with what can be obtained from investment in the preference shares of leading British industrial companies.

CONSIDERABLE interest has been aroused in the market by the recent decision of the Hague Court in the Royal Dutch dollar bonds case. The action was brought against the Royal Dutch Company and its subsidiaries for a ruling that the service of the bonds should be payable on a gold basis. In the case against the Bataafsche Petroleum, the principal Royal Dutch subsidiary, whose bonds are payable only in New York, the claim for payment on a gold basis was rejected on the ground that disbursement on the former gold basis is not now legally necessary in America. The case against the Royal Dutch, however, succeeded, since its bonds are payable in Amsterdam, where the former gold standard prevails, as well as in New York. Although the amount involved in the decision was substantial, the case had little or no influence on the Royal Dutch share price. It has a wider significance, nevertheless, as another example of the inconvenience and uncertainty resulting from exchange disorganisation, which imposes even greater difficulties on world oil distribution than it can ever involve in the settlement of company financial questions.

RECENT ANNOUNCEMENT of a dividend on the 8 percent participating preference shares of the United British Oilfields of Trinidad produced a good effect on the shares immediately concerned, and on Trinidad issues generally. The payment, which represents the dividends due on September 1, 1932 and on March 1, 1933, was the first made on these shares, of which 1,050,000 were offered to existing shareholders at par in February 1932. The shares, which have a nominal value of 6s. 8d., were practically all taken up by the Anglo-Saxon Petroleum Company, the Royal Dutch-Shell affiliate, which underwrote the issue. The dividend on the preference shares remains one year in arrears, but their price rose from 15/32 to 17/32 after the announcement that the payment would be made. In view of the sum which it will involve, the distribution indicates a substantial improvement in United British earnings during 1933.

AT ANYTHING around its recent level, the quotation for Attock Oil £1 shares discounted a good deal of uncertainty. For this reason, the latest progress report issued by the company had a good effect on the price of the shares, although its terms were not particularly encouraging. It stated that sales of petroleum products in 1933 were considerably below the 1932 figure, and that a rapid decline in output from producing wells had been accompanied by disappointing results from new drilling. Although no close estimate can be made of financial results for last year, the directors anticipate that there will be a small loss after providing for all boring costs at Khaur and Dhulian, but before providing for major depreciation. Stocks of crude and refined products declined during 1933, resulting in an increase in the company's cash resources. This statement suggests that no immediate problems will arise in connection with the finance of the company's deep drilling programme, which is being continued in the hope of reaching new oil horizons. Nothing appeared in the progress report to change the market view that, despite sound and conservative management, field developments have left the company with a highly speculative immediate outlook. Attock shares rose sharply after the report was issued, but the market in them is now so narrow that it takes very little buying to make an appreciable difference in the price.

ALEC H. DAY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THE BUCKEYE TRACTION DITCHER CO.
FINDLAY, OHIO, U. S. A.

Selling the charm of the English Countryside in Winter

Winter Motoring has its charms no less than Summer Motoring — An artistic publicity scheme to fight trade slackness in winter.

WHY should winter be a "close season" for motoring? Some reduction in motor traffic is inevitable, but most motorists who lay up their cars or use them only for necessary journeys do so largely from habit. Winter motoring has charms all its own, and if the weather is not so suitable for family picnics, there is the compensation that the Open Road is never more open than in the winter months.

Even if the motorist's aversion to winter motoring is irrational, however, the difficulty of removing it is no small one.

The situation calls for a collective advertising effort by the whole motor trade and its subsidiaries, says the *Advertiser's Weekly* of London. But in the meantime a single petrol company—Pratts—is tackling the problem. Instead of the customary name publicity usual to the season this company is running six pieces of copy which try to tempt the motorist to take a run into the sunny, wintery English countryside.

Rowland Hilder, who has illustrated the series, has caught the spirit of the winter landscape with a skill which is magical.

Advertiser's Weekly correspondent continues: The motor industry ought to be grateful to Pratts for their pioneer effort on its behalf. I hope it will be fired with enthusiasm to share in it.

Those who decry the value of fine art in advertising, claims the *World's Press News* of London, will have difficulty in explaining away the appeal of Pratts new 'Winter Charms' displays.

There are still thousands of owner-drivers in this country who refuse to follow the crowd, preferring a pleasant motoring cruise round the country to streaming in procession along the great highways, and who are susceptible to the suggestions conveyed in Rowland Hilder's finely realistic drawings.

'Selling' the winter countryside in this way is a sure way of selling more petrol.

Every year more motorists appreciate that with the modern car the weather does not matter. Motoring in winter can be very pleasant. I am reminded of this, says a writer in the *Autocar*, London, by the splendid advertisements Pratts are now running advertising winter motoring, and, only incidentally, Pratts Ethyl petrol. My recent reference to interesting advertisements caused several readers to write to me, and many of them mentioned 'Winter Hath its Charms' series by Pratts. I have tried to analyse these advertisements to see where their appeal lies. Is it in the beautiful drawings by Rowland Hilder or the suggestion given by the 'copy' of pleasant motoring, or, again, the combination of both with the very tasteful typesetting? I have come to the conclusion that the effect is very similar to that produced by winter memories of palm trees and summer seas. Here we have delightful motoring presented to us by our firesides and we long to get on the road. I venture to say that they will really work the oracle and send people out into the fresh air, thus serving the trade of this country, for there is nothing so stifling to industry as stagnation; when we spend Saturday afternoons and Sundays dozing in an armchair before a fire we have suspended motion, as it were. If we all did it all the week round the whole clock of industry would run down, because the only things we should require would be coal, food, drink and soap; very little of the last mentioned, perhaps, because we should get into a state of not caring.

A typical illustration from the "Winter Hath Charms" series of advertisements. The artist, Rowland Hilder, has certainly captured the atmosphere of the English countryside in winter.

Advt.

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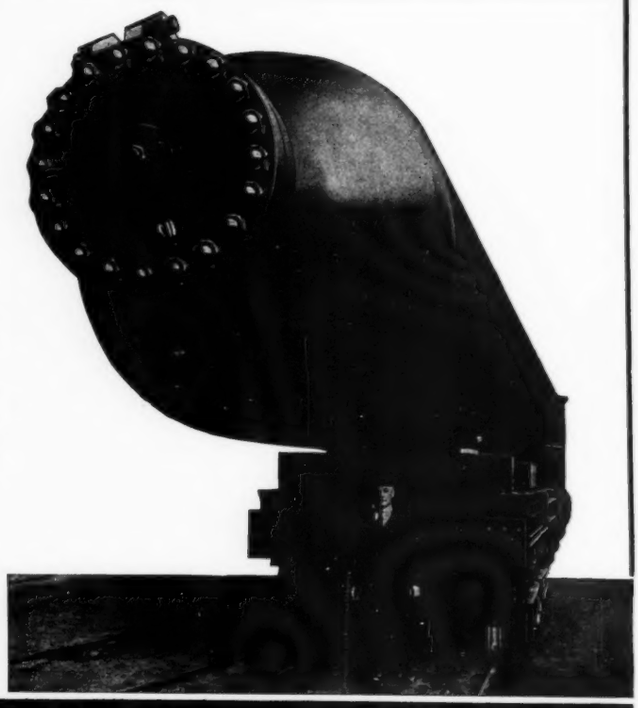

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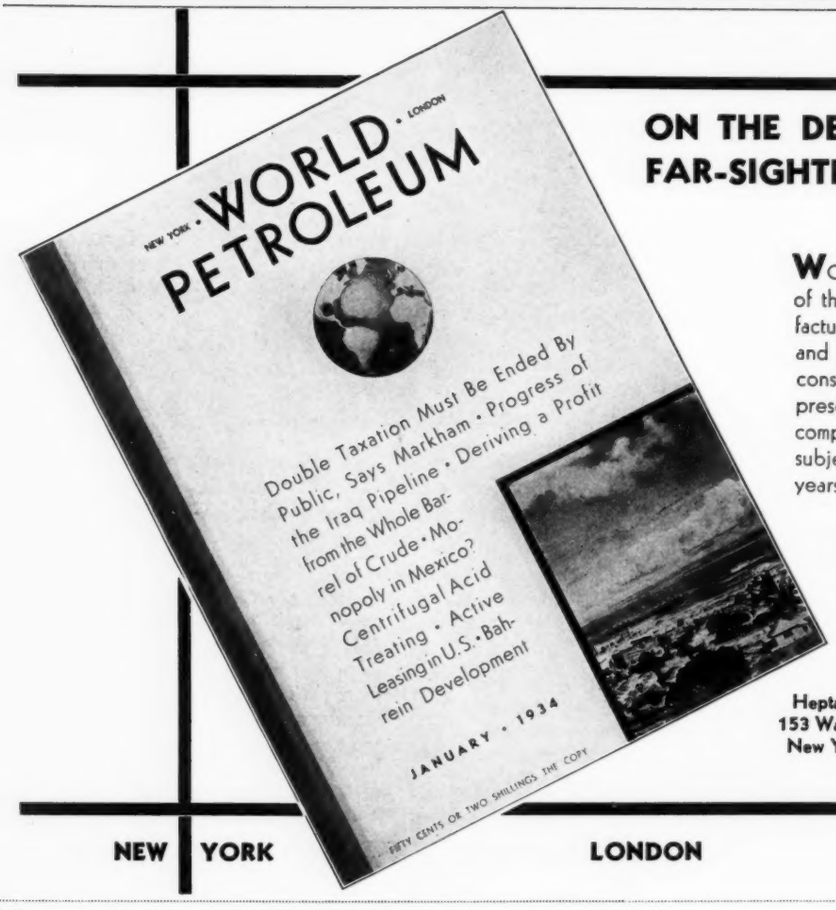
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